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retro GAMER

164 PAGES OF ICONIC GAMES

ANNUAL

Digital Edition

FUTURE

VOLUME 7

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WELCOME TO

retro* GAMER ANNUAL

The great thing about retro games is there's so much history to cover. This latest book you're holding can be considered a time machine, a way to jump back to those happy memories you had as a kid, playing *Pac-Man* for the first time in your local arcade, or battling through the deeper dungeons of *Gauntlet*. Maybe you're a little younger and associate retro with the booting of that PlayStation splash screen, or perhaps your strongest gaming memory is newer still and was encountering *Star Wars: Knights Of The Old Republic* for the first time.

Regardless of when you started your retro journey, our latest annual is right there with you, delivering a timeline of fantastic articles that map out gaming's early infancy, as well as celebrating some of its biggest characters and franchises, from *Doom* and *Alex Kidd* to *Super Mario Bros* and the good old *Pac-Man* series. Retro gaming is bigger than it has ever been and that's a good thing as there's plenty to discover, regardless of whether you're brand-new to the retro scene or a grizzled veteran.

As a result, we've painstakingly crafted this tome from the past year of **Retro Gamer** content to ensure that whatever your interest, whatever your age, you'll find some truly amazing articles to enjoy.

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FUTURE

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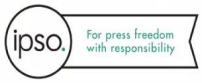

retro GAMER ANNUAL

THE ULTIMATE GUIDE TO CLASSIC VIDEOGAMING

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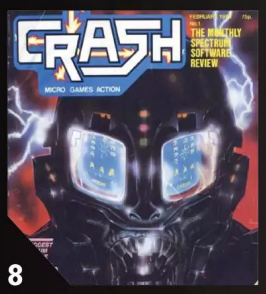

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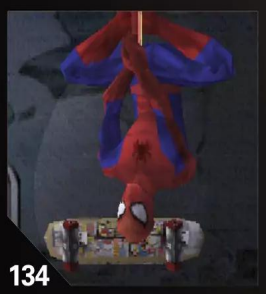
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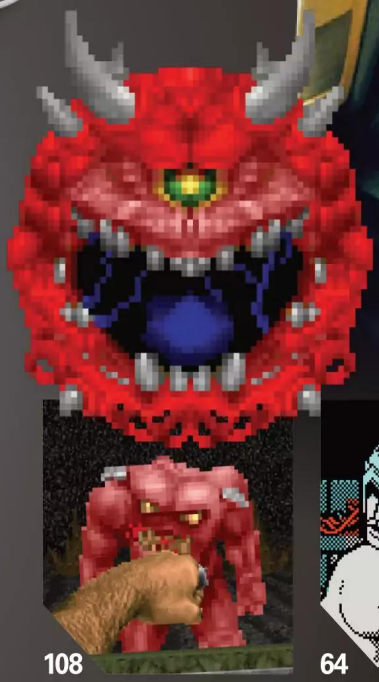
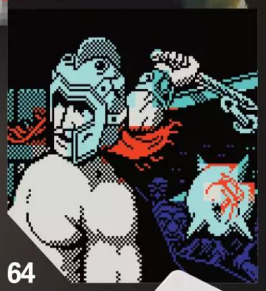
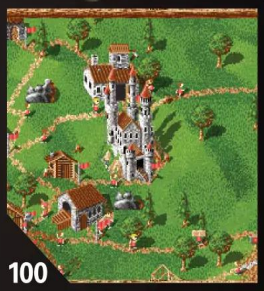






BACK TO THE 80s

THE BRAT PACK

ALTHOUGH IT STARTED IN THE SEVENTIES, GAMING TRULY EXPLODED IN THE EIGHTIES AND IN DOING SO, IT DELIVERED SOME OF OUR BEST GAMING MEMORIES, FROM BUDGET TITLES TO MAGAZINES CRAMMED WITH THE LATEST REVIEWS. HERE, ICONOCLASTS FROM THE PERIOD EXPLAIN WHY IT WAS SUCH A GREAT DECADE

WORDS BY DARRAN JONES AND NICK THORPE

Everyone has their favourite period for gaming, whether it's the embryonic stages of the Seventies, or the three-generation span of the Nineties that saw 8-bit systems dying while 32-bit consoles kicked off the 3D revolution. For many of our readers, we're guessing the Eighties was their favourite period for gaming, and in all honesty it's not hard to understand why.

While there were great games and hardware around in the Seventies, everything exploded in the following decade and the wealth of choice was truly staggering. Home computers largely dominated this period, building on the foundations that had been started in the previous decade by companies like Apple, Atari and Commodore. As home micros became more affordable in the Eighties and highlighted the strengths of videogames, computer magazines became prolific and many focused more on games, delivering type-ins you could try out, and later supplying cover tapes with independent and commercial games on them.

This influx of home computers naturally led to youngsters wanting to push the limits of what was possible, and as a result bedroom coders began to appear. John Romero and Jordan Mechner were just a few of the coders tinkering away in the US, primarily on Apples and Ataris, while various Sinclair, Amstrad and Commodore systems paved the way for the likes of David Perry, the Oliver twins and Jeff Minter in the UK.

The Eighties was also a period when the gaming industry began to 'grow up'. While big companies like Apple, Activision, Commodore and Atari certainly existed in the Seventies, more and more publishers appeared in the following decade. Ordering games by mail order was still possible, but it was becoming increasingly easier to find games in shops and even your local newsagent.

While a multitude of computers were released in the Eighties, let's not forget the consoles of the period. Atari was a prevailing force with various systems from the 5200 to the Lynx debuting in the decade, and while the US console crash affected the industry, the Atari name remained synonymous with gaming for most of the Eighties, and it was only matched by Nintendo after the Japanese giant began to dominate the US post-crash. Sega's Master System fared better in Europe, and by the latter half of the decade it was obvious that consoles were on the rise, although many of those 8-bit systems struggled to take the shine off the 16-bit computers that began appearing during the mid-Eighties.

As the decade continued, genres began to evolve, or even appear, while arcades continued to lead the hardware charge that had first began in the Seventies. Developers began to think outside the spaceship and vehicle avatars that had become so popular in the previous decade, and actual characters began to appear, some of which are now the most recognisable stars in the world. The following pages will highlight the above, and many other aspects of the decade which made the gaming scene so much fun to be a part of. We hope you enjoy the ride. ▶

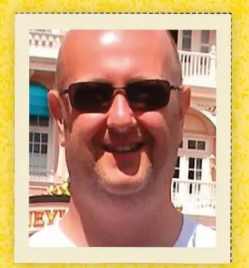
ALISON BEASLEY
PR for Mastertronic

GARY BRACEY
Software Director for Ocean Software

JULIAN 'JAZ' RIGNALL
Games journalist for *Zzap64!*

CHRIS ABBOTT
Owner of C64 Audio

DAVID CRANE
Cofounder of Activision



PAUL HUGHES
Graphics artist for Ocean Software

PHILIP OLIVER
Co-creator Of Dizzy

MY FAVOURITE LOADING SCREENS

OCEAN ARTIST **MARK R JONES** ON HIS FAVOURITE COMPUTER ART

ESKIMO EDDIE BY F DAVID THORPE
ZX SPECTRUM, 1984

"One of the very first screens I ever saw where some precise work into the placing of the attributes had been done. I thought this looked beautiful at the time and showed me how good a loading screen could be if done by someone with the right skills."

HARDCORE HARDWARE

WHILE IT'S THE GAMES EVERYONE LOVES, A BIT OF 'MY MACHINE'S BETTER THAN YOURS' IS ALWAYS FUN – AND IN THE EIGHTIES, THERE WAS A GREATER CHOICE OF HARDWARE THAN EVER BEFORE OR SINCE. WE PRESENT A SELECTION OF THE MOST NOTABLE MACHINES

PC
1981

The PCs you play today bear little resemblance to IBM's original machine, and it took years to come into its own as a gaming platform, but the clones changed computing forever.

VIC-20
1981

Commodore's home computer was a brief phenomenon, becoming the first computer to ever sell a million units. Soon superseded, it still provided many with a great first experience.

ZX81
1981

Available in prebuilt and kit forms, Sinclair's follow-up to the ZX80 was incredibly limited but very cheap. Most games of note required the 16K RAM pack add-on to even run.

BBC MICRO
1981

Acorn's 8-bit computer was a fixture in schools and saw plenty of educational games, but its high price made it a hard sell for home audiences. That said, *Elite* will always be great.

VECTREX
1982

GCE's self-contained console boasted a vector display, allowing for a true arcade look. It was well-received by critics, but the prevailing market conditions cut it down before its time.

ZX SPECTRUM
1982

By adding colour graphics capabilities to its newest machine while retaining a low price point, Sinclair created a huge hit in the UK and other European markets.

COMMODORE 64
1982

This machine's power, combined with Jack Tramiel's willingness to undercut the competition, meant that for many years it was the best-selling computer ever made.

MSX
1983

This attempt to provide a computing standard never took off as envisioned, but was popular in places such as Japan and the Netherlands, and supported well by the likes of Konami.

MACINTOSH
1984

The first in Apple's line of computers was not really aimed at our audience, with its monochrome display, but some fun games allowed business types the occasional distraction.

SINCLAIR QL
1984

Sir Clive's attempt to hit the business market met with hardware problems and little interest, while a lack of games put off the Spectrum audience. Sinclair Research never recovered.

AMSTRAD CPC
1984

Alan Sugar's box of tricks couldn't overcome the head start its rivals had, but was a very capable machine in the right hands, with colourful (if chunky) graphics.

NES
1985

After taking the lead in Japan's console market with the Famicom, Nintendo brought its 8-bit hardware west and revived the American console market with a monstrous hit.

PC ENGINE
1987

Hudson Soft's efficient chip design crammed a huge amount of power into a small space. Magazine coverage sent readers crazy, but it never officially hit British shores – a real tragedy.

ATARI XEGS
1987

A direct console version of the Atari 8-bit range, which attempted to bridge the gap between the computer and console markets. A neat idea, but not one which had lasting power.

ACTION MAX
1987

This console hooked up to your VCR to provide lifelike gaming, but the reality was so limited as to be barely interactive at all. It garnered little interest then, and that hasn't changed.

MEGA DRIVE
1988

Sega's 16-bit hit offered near arcade-quality graphics in the home, but software support – and a UK release – took a while to arrive. By the time they did, the Nineties had already begun.

COLECOVISION
1982
Bringing the fight to Atari, Coleco leaned on quality arcade conversions and a range of hardware add-ons. A promising start was scuppered by the videogame market crash of 1983.

ATARI 5200
1982
This successor used the powerful Atari 8-bit home computer as its basis. A lack of backwards compatibility and dodgy joysticks meant that it soon struggled in the marketplace.

DRAGON 32
1982
Made in Wales and bearing the patriotic branding to prove it, this machine was initially quite popular but limited capabilities stifled it. Dragon Data would fold two years later.

SG-1000
1983
Sega's first home console offered similar capabilities to the ColecoVision – which immediately put it behind Nintendo's Famicom. It sold better than expected, but was quickly outmatched.

ORIC-1
1983
This surprise success for Tangerine Computer Systems sold particularly well in the UK and France by matching Sinclair's pricing, giving way to the Atmos – a flawed and failed successor.

ACORN ELECTRON
1983
The BBC Micro's cut-down cousin wasn't a patch on the real thing, but while it didn't trouble the bigger players, it did offer enough value that it found a loyal audience in the UK.

MY FAVOURITE LOADING SCREENS

RENEGADE BY MARK K JONES
AMSTRAD CPC 1987
"It's still as good as when I watched Mark draw this while at Ocean. I'd never seen an Amstrad loading screen look this good before. Approaching his desk from a distance, it could have been a screen on the ST or Amiga. It was only when you got closer that the blockiness became apparent. It shows a use of colour unsurpassed on the Amstrad. It's an amazing piece of work."

AMIGA
1985
Commodore's line of 16-bit computers offered strong multimedia capabilities, but at a price. The line didn't take off as a gaming platform until 1987's cheaper Amiga 500.

ATARI ST
1985
Atari's 16-bit computers were cheap enough to ensure a wide audience was built quite quickly, but its weaker gaming capabilities saw it fall behind the Amiga after the Eighties.

MASTER SYSTEM
1986
Rebranding its Japanese Mark III hardware, Sega followed Nintendo west. It was the leading console in Europe, at a time when consoles played second fiddle to computers.

ATARI 7800
1986
Shelved following a test launch, the 7800 was a far better successor to the Atari 2600 than the 5200 had been. Unfortunately, its sound capabilities left a lot to be desired.

FM TOWNS
1989
Fujitsu's computer had a 32-bit CPU, a built-in CD-ROM drive, a beautiful design and plenty of desirable games. What more could you want? Well, a UK release would have been nice.

GAME BOY
1989
Nintendo's modest handheld pulled no punches when it came to software. With *Tetris* and *Super Mario Land* at launch, its cost and battery life advantages were just icing on the cake.

LYNX
1989
Atari's colour handheld was a true powerhouse, offering features that home hardware couldn't provide. Hungry for batteries and starved of software, it fell behind the competition.

SAM COUPE
1989
Hosting an 8-bit CPU while boasting of 16-bit performance, this machine from Miles Gordon Technology missed the Christmas rush and its owners were bankrupt by the summer.

AWESOME ARCADES

IN THE EIGHTIES, IF YOU WANTED THE ULTIMATE IN GRAPHICAL TECHNOLOGY AND BRUTAL CHALLENGE, THERE WAS ONLY ONE PLACE TO GO – YOUR LOCAL ARCADE. WE LOOK BACK AT AN AGE WHERE THE COIN-OP SCENE WAS STILL THE ENVY OF THE GAMING WORLD

» [Arcade] Cabinets had to be built to take abuse – not just cigarette burns and spilt drinks, but also hardcore button punishment.

During the Eighties, computers of any kind were expensive, and they had to be built for a general purpose. Not so with arcade machines – every penny spent on making them was geared towards ensuring that they were really, really good at running games. As a result, they technologically outstripped anything in the home. "That was the main allure of arcades – being able to spend a few coins to play something that was so far more advanced than the microcomputer and console titles of the period," says Julian Rignall, an arcade expert who went on to a career in games journalism. "Games like *Pole Position*, *Dragon's Lair*, and *Star Wars* were all a quantum leap ahead of what was available for home systems and they all delivered stunning gameplay experiences that were immersive, addictive and tremendously exciting. That was an incredibly strong draw for any red-blooded gamer."

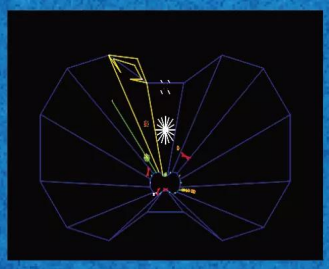
Of course, going to the arcades also meant getting out of the bedroom. "If you went to an arcade regularly, you'd inevitably get to know the other players that frequented the place because you'd chat to them while waiting your turn to play a particular game," says Julian. "For me, it was akin to some kind of gaming club, and I feel many provincial arcades offered that kind of experience to their regulars." Of course, getting enough guys into a room together inevitably means that competition will break out, and Julian thrived in that environment. "I was very lucky in that my local arcade had some really good players who regularly frequented the place, and that made for a very competitive scene. We were constantly trying to beat each other's high scores and we'd keep records on who had the highest score on which machines." But the competition was friendly, and tips were shared openly. "I think much of that was to do with the fact that one's gameplay experience was public – people could and would simply stand there and watch you play, especially if you were good at a game."

The excitement when a new game was arriving was palpable. "We always knew when there was going to be a new delivery because the arcade technicians would start moving machines about to make room for the new one, and at that point we'd start asking questions," Julian recalls. "Was it an upright or sit-down cabinet? Had they played the game or did they know what it was?" But without the kind of hype cycle that games have today, each game was an unknown quantity until the engineer switched it on. "Once he'd checked that it was working fine, it would be turned over to us players so we could start playing. And that's when things would start getting very exciting as we began to figure out how to actually play the game. In cases such as *Mr Do!*, *Dig Dug*, *Frogger*, and *Pac-Man*, they were new concepts at the time and it took a good few tries to get the general gist of their gameplay. But that was part of the fun – figuring out how to play each game and deciding whether or not it was entertaining and worth piling coins into."

As the decade wore on, manufacturers produced increasingly elaborate cabinets. "While I enjoyed playing them, they were always a bit gimmicky to me," says Julian. "The showcase coin-ops always cost a lot more to play than 'regular' arcade games, and while they usually delivered a very exciting and intense experience, their gameplay was generally short. Unlike titles like *Defender*, *Asteroids*, and *Missile Command* that could be played for hours on a single credit, games like

INCREDIBLE INNOVATIONS

THE TECHNOLOGICAL DEVELOPMENTS THAT KEPT PLAYERS REACHING FOR THAT NEXT 10P PIECE

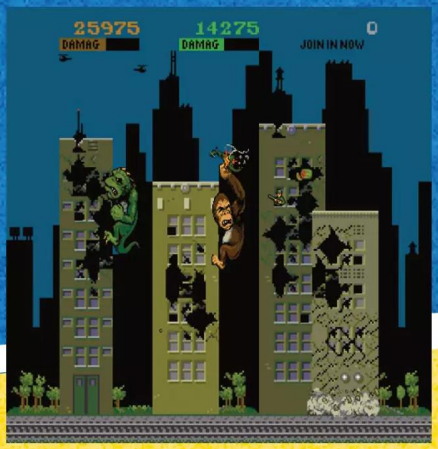


COLOUR VECTOR GRAPHICS

Games with raster displays had gone colour some years ago, but *Tempest* proved that you needn't forego beautiful, crisp lines just for a splash of colour. Games like *Star Wars* would cement the technology in the hearts of gamers everywhere, but alas, it wasn't long for the world and was abandoned before the decade's end.

LASERDISC GAMES

By using discs that stored high-quality video, arcade games could achieve unprecedented graphical detail – albeit at the expense of interactivity. Sega's *Astron Belt* introduced the technology, but *Dragon's Lair* beat it to market and kickstarted the craze properly, thanks in large part to some sumptuous Don Bluth animation.



» [Arcade] While multiplayer gaming and the arcades are inextricably intertwined, the Eighties saw more games going beyond two players.

» [Arcade] Late Eighties games like *Golden Axe* show the pace of progress in the arcades pretty well.

After Burner, Out Run, and *Space Harrier* all had distinct endings that limited your play time." But plenty of classics still needed just a stick and buttons, from *Wonder Boy* and *Strider* to *Rolling Thunder, Contra* and *The New Zealand Story.*

But it's the blasters that top Julian's personal high score table. "*Robotron: 2084* is simply the sheer essence of a shooter distilled down into a frenzied single-screen experience. The rate that you mow down the robotic enemies is incredibly satisfying, and I love the various behaviours of the different denizens – they really test your skills and reflexes to their limits," says the arcade veteran. "And then there's *Defender* – which I think is perhaps the greatest shooter ever made," he continues. "Whether you're thrusting along at full speed mowing down swarms of Landers, avoiding the attentions of a pursuing Baiter, or trying to fly through a hail of ordnance to pick up a falling astronaut, *Defender* offers a simply sensational shoot-'em-up experience."

MY FAVOURITE LOADING SCREENS

GHOSTS 'N GOBLINS BY STE PICKFORD
COMMODORE 64 1986

"I loved this version of the game. One of the only games that made me wish I had a C64. I used to play it in the computer shop I frequented. I loved the music in it, and this loading screen was miles better than the one attached to the version of it I played at home."

PREACHING OF THE CONVERTED

MINDWARE'S **MIKITO ICHIKAWA** TALKS ABOUT THE ART OF BRINGING ARCADE GAMES TO THE HOME

We understand that arcade games inspired you to begin developing games. Could you please tell us about that?
The first action game I played was *Space Mouse* for the PC-8001 at a PC shop. At the time, I was interested in computers because I wanted to make them do aerodynamic calculations. My first personal computer was a dead copy board of MZ-80. In the midst of all this, Namco's *Dig Dug* started to catch on and I went to see it. I'd played *Space Invaders* and *Asteroids* before that, but the impact of *Dig Dug* was immense, and I've been making games ever since.

Were there any conversions of arcade games that you thought were impressive in the Eighties?
There are a lot of them. What I was particularly impressed with was *Mappy* for the PC-6001 MKII. The logic of the enemy was firmly based on the arcade version, the pattern of the map was made as similar as possible. There were many conversions that did not have bonus stages such as NES and MSX, but the bonus stage was also reproduced, and it was a conversion with a very high degree of completion.

When converting games like *Slap Fight*, how did your process differ from today?
Nowadays, it's an emulation port. On the other hand, when it comes to *Slap Fight*, the Mega Drive is significantly less capable than the original hardware, so it couldn't be developed in the same way. The source code was very helpful in porting *Slap Fight* with detailed character movement logic and lots of hidden features. However, the source code was handed to me on a printed piece of paper, so I had to go through everything, which was a lot of work. […] As for the music, I was provided with a handwritten copy. Since it was a score, not data, it was only a reference and it took a lot of time to reproduce every detail.

You have now brought a number of classic arcade games to modern platforms. Why do you think players are still interested in playing arcade games from the Eighties?
Recently, the development budgets of the major publishers' games have skyrocketed. This makes the graphics and sound gorgeous, but since players know that new games have more gorgeous graphics and sound than the old one, there aren't that many surprises. I was shocked when *Tetris* appeared in the late Eighties and surprised when *Minecraft* appeared in the Noughties. I think there are a lot of surprises like this in Eighties games. Whenever I release a ported version of an old game, I always make a version that goes beyond the arrangement and can be called the 'Ultimate Evolved Version', and I do this because I want you to experience the surprises you experienced in the Eighties.

FILLED POLYGONS

Dave Theurer's *I, Robot* introduced the technology that would ultimately come to dominate videogame graphics in 1984, but it didn't do particularly well for Atari. 3D graphics technology started to become more popular towards the end of the decade, thanks to racing games like *Winning Run* and *Hard Drivin'*.

MOTION CABINETS

The trend for full-body experiences began with *Hang-On*, which required players to steer a replica bike, but soon saw games turned into miniature theme park rides. From the hydraulic seats of *Space Harrier* and *Out Run* to the spinning base of *WEC Le Mans*, plenty of games implemented physical experiences.

LINKED MULTIPLAYER

Playing a game with a friend is fun, so playing with more friends is surely more fun, right? That was Namco's reasoning when introducing *Final Lap*, a twin sit-down racing cabinet that could be linked for up to eight players to enjoy. These days, it's a feature that no respectable arcade racer can omit.

CREATING CHARACTER

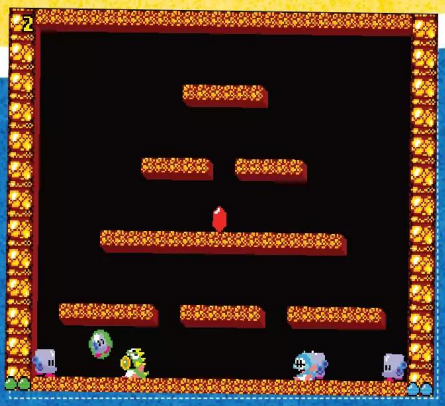
THE EIGHTIES SAW AN EXPLOSION IN RECOGNISABLE VIDEOGAME CHARACTERS, INSPIRED BY THE CARTOON CHARACTERS BELOVED BY KIDS WORLDWIDE. WE LOOK BACK AT THE WHY GAMING HEROES BECAME SO IMPORTANT

When you look at the growth of gaming during the Eighties, so much of it is driven by the popular characters of the era. While abstract games were still capable of becoming huge hits – just look at *Tetris* – companies that found their star character could rake in tens of thousands of sales, maybe even millions. If that happened, the chances were they would prosper for a long time to come. When Hollywood eventually came knocking in the Nineties, the first projects to make it to the screen featured characters conceived in the Eighties – Mario, Billy and Jimmy Lee of *Double Dragon*, and *Street Fighter*'s Ryu.

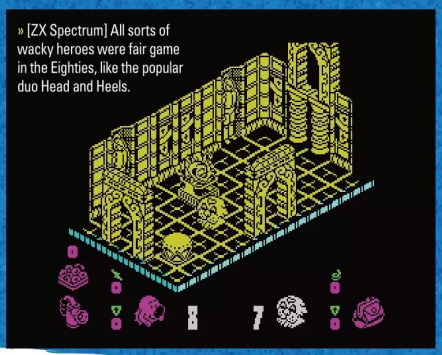
But why were characters so important, and what was it about the Eighties that allowed them to prosper? "People connect better with personalities than machines or abstract objects. Even though the graphics were basic back in the Eighties, we all had imaginations that filled in the details," says Philip Oliver, co-creator of the *Dizzy* games. Until the very end of the Seventies, graphics technology didn't really offer sufficient levels of detail and animation to convey character. "It was hard to relate, or get excited about the cannon in *Space Invaders*, or a low resolution, top-down car or tank," Philip continues. "Then Pac-Man, Jump Man (later called Mario), Smurfs (one of the first character games we saw on an Atari 2600 – which amazed us) came along and even though the game itself didn't show the character in much detail, the box art, and sometimes the loading screen helped fill in the gaps."

Of course, creating a memorable character is far from a simple task. "For a character to become memorable it needs to be unique and a bit quirky! Dizzy achieved this by being a large happy face on legs... which everyone decided was an egg," says Philip. "His energetic movement and facial animations (tough to do on characters in low resolution games) gave him a fun personality that captured player imaginations – *eggsactly* as we hoped for!" Once the character is set, the game designed around them comes with its own considerations. "You think about the game as a world, a place in which your character needs to live and move around. So many decisions now revolve around this, his appearance dictates the art style, the gameplay mechanics revolve around what he looks like he's capable of doing," Philip explains. "The story and missions need to put him, or her, central to the events."

With gaming seen as a hobby for young people at the time, many of the characters back then resembled cartoon characters in their design. "Pac-Man was the first videogame character as far as we're concerned, but other popular characters for us included Frogger, Q*Bert, Mr Do (a clown), Chucky Egg, Manic Miner, Frak! and Thing On A Spring." On the consoles, a different set of stars was emerging from the Japanese scene – Mega Man, Link, Samus Aran, Alex Kidd, Bonk and arguably the most popular gaming character, Mario. "We knew him as Jump Man from Donkey Kong (or



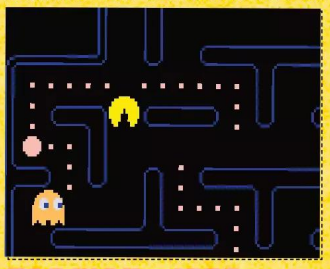
» [Arcade] Plenty of Eighties heroes gained fame across genres – Bub and Bob hit the puzzle scene later on.



» [ZX Spectrum] All sorts of wacky heroes were fair game in the Eighties, like the popular duo Head and Heels.

HALL OF HEROES

A SELECTION OF THE MOST RECOGNISABLE GAMING HEROES OF THE EIGHTIES – AND WHAT THEY'RE UP TO NOW



PAC-MAN • 1980

▶ This hungry yellow chap was an arcade phenomenon in the Eighties, despite being designed so that you couldn't discern his emotions. It didn't matter – he ended up starring in many sequels and a cartoon series as well as adorning all sorts of merchandise, both in the Eighties and far, far beyond.

MARIO • 1981

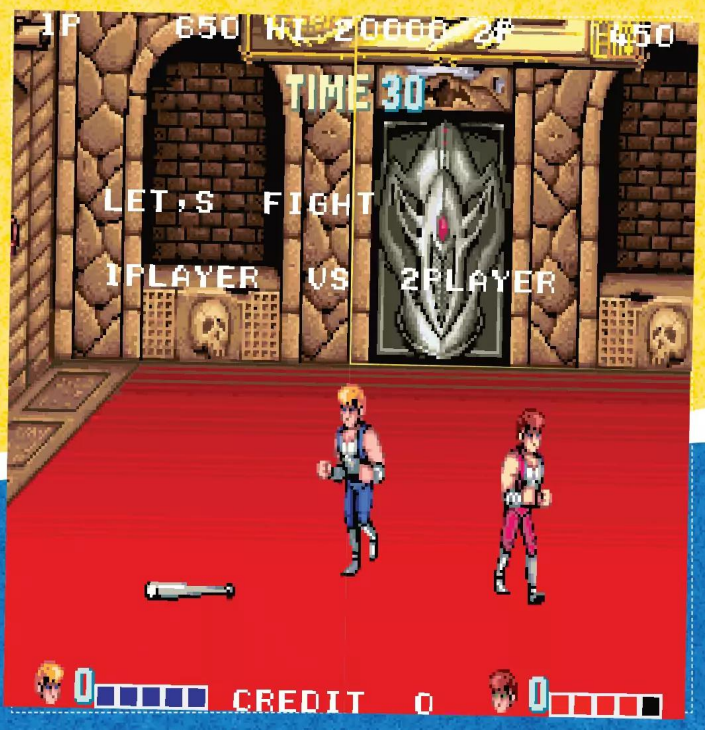
▶ While *Donkey Kong* was named after its starring villain, the unassuming plumber that battled him soon became a bigger star thanks to a series of incredible platform games. As the most recognised of Nintendo's many famous characters, he'll surely be around for decades to come, too.

MINER WILLY • 1983

▶ What type of character could be more emblematic of Eighties Britain than a miner? His third proper outing never saw the light of day thanks to creator Matthew Smith's difficulties in finishing the game, curtailing his career, but we'll always have the excellent *Manic Miner* and *Jet Set Willy*.

SABRE MAN • 1984

▶ Ultimate's hero was one of the few characters to undergo development between games – as well as changing gameplay styles between *Sabre Wulf*, *Underwurlde* and *Knight Lore*, he actually become a werewolf at one point. *Sabre Wulf* saw a 2004 remake, but he's been inactive since.



Killer Gorilla on BBC) as we didn't see *Super Mario Bros* until late 1989 when we went to America," says Philip, providing a reminder of how gaming scenes were so much more regionally distinct at the time.

Of course, as we grew up our tastes shifted and big hits today tend to star realistic human characters. "Many games these days are trying to appeal to 15-plus year olds who generally prefer more mature characters and realistic environments," says Philip, explaining the decline of the Eighties-style cartoon hero. "But new characters are still being introduced, targeted at kids, take for example the Angry Birds which even lead to two movies. Then there's Steve and Alex from *Minecraft*, although since their names are less unique they are less memorable. More recently you have Goose, from the *Untitled Goose Game* – they really needed to work on their marketing names!"

» [Arcade] Billy and Jimmy Lee prove that siblings were popular choices whenever a second player got into the mix.

» Some characters had relatively low-key debuts – Solid Snake only became a true superstar in the Nineties.

KING OF THE JUNGLE

DAVID CRANE TALKS ABOUT THE CREATION OF ONE OF GAMING'S FIRST HUMAN HEROES, PITFALL HARRY

What made you create Pitfall Harry?
Pitfall! came about primarily from my desire to make a game with a human main character. At the time, most game characters were inanimate objects – tanks, space ships, etc. I animated the character and placed him in a jungle setting, and it worked very well.

Do you think giving your character a name and personality helped players bond with him?
Pitfall! was one of the first times that you would control a human-like character in a videogame as your avatar. As my alter ego it was natural to name him. I made him do all the fun things that I would have enjoyed – from swinging on vines to hunting for treasure. Frankly, he didn't exactly have a 'personality', but the game-player could identify with him as they risked the hazards of the game together. If a player bonded with him, it would likely have been because you were risking your lives together.

Why do you think so many videogame characters started appearing during the Eighties?
Videogame technology went through a rapid growth in the Eighties, allowing more detailed animations to be created. Controlling an on-screen avatar was clearly enjoyable (whether it was a jungle adventurer or a plumber), so it was only natural to use that newfound animation capability to make increasingly complex characters. I think that led to the ability to imbue characters with personality as well.

Did you have much involvement with Harry's appearance in *Saturday Supercade*?
I offered to be Pitfall Harry's voice, trying out sort of a Dudley Do-Right characterisation. But I was never taken seriously since I was needed in the lab making games.

What things should you keep in consideration as a developer when creating a videogame character?
Character development is an important aspect of mainstream media, but it wasn't much of a factor in the Eighties. We first figured out how a character would act in the context of a game; then figured out his 'look' given the available technology. What authors refer to as 'character development' took a distant third. These days, on the other hand, with videogames rivalling films in complexity and interaction, game characters deserve every bit as much breadth as characters in other media.

Why do you think Pitfall Harry remains so loved by gamers?
Pitfall! was a huge success during the rise of videogames. Virtually every game-player at the time either owned the game or played it at a friend's house. It was also visually stunning for its day, so everybody who played it had fond memories (even if some found it hard to play). That was many people's 'golden era' of gaming, and *Pitfall!* was very much in the game-players' minds at the time. I suppose Pitfall Harry benefits to this day from the nostalgic glow of those good old days.

» [Atari 2600] David says while Pitfall Harry didn't have a personality, gamers bonded with him as you were taking on deadly situations together.

MY FAVOURITE LOADING SCREENS

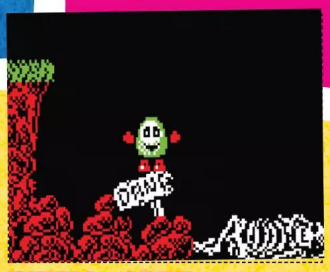
URIDIUM BY STEPHEN CROW
ZX SPECTRUM 1986
"I loved the ship. Coming out of the screen at an angle, it looked like a solid object I could reach out and pick up off the screen. Simple but effective rendering of the title, too."

WONDER BOY • 1986

▶ This hero has had a variety of odd names, much like his own series, and turned from an axe-chucking skateboarder into a shapeshifting swordsman. It seemed like his glory years were long behind him until recently, when a surge of new activity gave him a welcome career renaissance.

ALEX KIDD • 1986

▶ Sega's hero was a little kid with a huge fist and a love of rock-paper-scissors. Though he starred in some cracking games, ropey outings like *The Enchanted Castle* and *Hi-Tech World* meant he never gained a reputation for consistency before he was sidelined by a blue show-off in the Nineties.



DIZZY • 1987

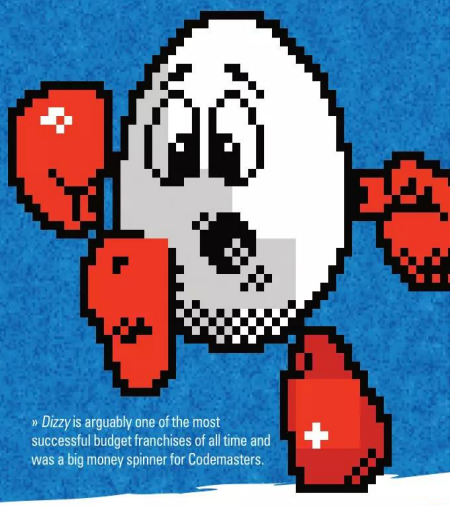
▶ The prince of the Yolkfolk was a smash hit on the home computer scene, doing the business for Codemasters across a series of arcade adventures. He'd later star in plenty of spin-offs and even make a move to consoles, but his career stalled in the mid-Nineties and he never moved to 3D.

MEGA MAN • 1987

▶ Capcom's most prolific character has starred in an enormous number of games, selling over 36 million copies, and enjoys great popularity amongst nostalgic NES owners. He's slowed down in recent years, but his retro-style outings since 2008 have been consistently popular with players.

BUDGET BRILLIANCE

WHILE GAMES WERE FAR CHEAPER IN THE EIGHTIES COMPARED TO TODAY, NOT EVERYONE HAD A SPARE TENNER TO SPLASH OUT ON THE LATEST TENT-POLE RELEASE. FORTUNATELY, BUDGET GAMES AND COMPILATIONS WERE A GREAT WAY TO ENSURE YOUR HARD-EARNED POCKET MONEY STRETCHED AS FAR AS POSSIBLE



» *Dizzy* is arguably one of the most successful budget franchises of all time and was a big money spinner for Codemasters.

Even if you make adjustments for inflation, games were still cheaper to buy during the mid-Eighties than they are today. £9.99 seemed to be the sweet spot for many publishers releasing games during this period and not everyone could justify them, meaning those more coveted releases would typically end up going on Christmas and birthday lists. Fortunately, there were plenty of ways to get your hands on cheap games without resorting to type-in listings, piracy or mail order clubs. Those alternative options were budget games and compilations, and our pockets will be forever grateful for them. "For me it was all about the cost," explains Simon Plumbe, the founder of Facebook's Mastertronic Collectors Group. "I didn't get a lot of pocket money growing up so it meant that I could still get a new game every week."

When you think of budget games today, Codemasters and Mastertronic are typically the first you think of. Both companies did exceptionally well at selling games at lower price points, and Codemasters is still going strong today – although its founders, Richard and David Darling, have long since left. While lower priced games certainly existed before Mastertronic appeared, it arguably helped shape what would become a very profitable part of the industry in the Eighties and early Nineties. Mastertronic first started selling £1.99 games in April 1984 and shifted over 40,000 units after a week on sale. A combination of enticing artwork, recognisable branding and targeting various home systems worked wonders for the company and led to countless other publishers following suit. "Atlantis really helped keep the VIC-20 going when others moved away from it, so I bought a lot of their games," continues Simon.

» You were unlikely to be disappointed if you received an Ocean compilation like *The Magnificent 7*.

» Companies like Mastertronic used bright, distinctive branding to instantly stand out on shelves.

"And I can't forget Firebird and Codemasters for delivering plenty of top-quality titles as well."

Plenty of other publishers jumped on board the budget train and the cannier ones even set up specific labels like The Hit Squad (Ocean Software) and Kixx (US Gold) as a way of giving older games a second bite of the cherry. Simon remembers these re-releases fondly. "We might complain about game prices now but as a kid in the Eighties even £10 for a new game was a lot so re-releases were fantastic," he explains. "There was no way we could afford everything, so getting a slightly older game cheap was great." Low prices also seemed to help stave off piracy too, with Simon recalling it being less prevalent. "It did happen sadly, but it didn't seem to stop kids from buying them, either," he recalls. "The price still made them appealing enough and I remember that I could

» Compilations were a great way of stretching your pennies when money was tight.

» Simon Plumbe loved collecting Mastertronic games so much he set up a popular collector's group.

MY FAVOURITE LOADING SCREENS

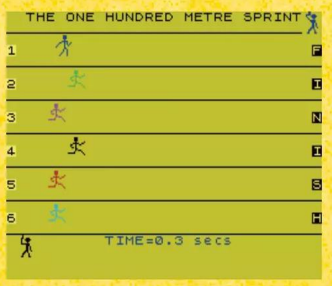
KNIGHT LORE BY TIM STAMPER
ZX SPECTRUM, 1984

"The very first Ulitmate loading screen that didn't use the game's artwork as a reference, a totally unique illustration not seen anywhere else. It only added to the mystique of the game. Excellent attribute work, and I loved the detailed skulls hanging off the Wizard's belt."

» [C64] Titles like *Knight Tyme* were a big success for Mastertronic and proved a small outlay didn't mean a weak game.

» [C64] Lower prices meant publishers could take risks. It's very unlikely *Pub Trivia* would have survived with a £10 price tag, for example.

» [C64] After releasing games for Mastertronic, the Darling brothers set up Codemasters and published *BMX Simulator*.



» [ZX Spectrum] While *Cassette 50* offered 50 games for £9.99 the actual selection wasn't the best.

» [ZX Spectrum] Titles like *Booty* were a great success for Telecomsoft's Firebird label.

always find large piles of budget games at all my friends' homes!"

Of course, budget games weren't the only way to enjoy gaming on the cheap in the Eighties; another popular way was to save your money and put it towards the many compilations that publishers released. Sure, some of the earlier examples like Cascade's *Cassette 50* were filled with pretty terrible games, but as the market matured, more and more publishers put larger effort into them, enticing gamers with a selection of hit games that they might not have otherwise been able to afford. Both budget publishers and full-price publishers saw the strength of being able to resell you games, leading to a range of compilations like *They Sold A Million*, *The Magnificent Seven*, *The Gold Collection* and the many different collections created by Beau Jolly to name just a few.

As great as these compilations proved to be for us, they could certainly provide problems behind the scenes. Simon Berry was a technician at Speedlock and would add protection to various games and subsequently compilations. "Since the compilation typically came out a couple of years after the original, occasionally there were compatibility issues across the ever-increasing variety of Spectrum hardware (Amstrad was pretty stable) to think about, although these tended to get identified during QA," he reveals. "Disks were particularly expensive. So then it became the challenge of how many games could fit on one side of a disk. I invented a novel disk format, and used data compression with this to jam as much as I knew how on to disks."

Those endeavours were tricky but worth it, as they created essential revenue streams for publishers and became a valid way of acquiring a great library of games without spending an absolute fortune in the process. Budget games and compilations became an important aspect of the games industry during this period, and it's somewhat sad that they're nowhere near as prevalent today.

MASTERING THE BUDGET

MASTERTRONIC'S PR ALISON BEASLEY

Why were companies like Mastertronic so successful?
Mastertronic were smart in selling packs or bundles of titles, together with the option of a rack or stand so that retailers could make an easy choice of a pack that came with 'x' number of games and an easy way to display them. Alongside the major retailer chains (eg Boots, WHSmith, Woolworths etc) they were very smart about selling into petrol stations; corner shops and a bunch of other outlets where people would make impulse purchases. The founders had a lot of retail experience, in selling videos (porn!) so really understood production, distribution and retail. They had a network of sales reps who covered various areas and retailers who played a vital role.

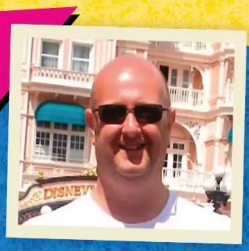
Did the low price point help against piracy?
Not much. There were big issues with piracy at markets and retail all over Europe. There were busts and seizures but it was a constant menace. Our team of reps were constantly on the lookout and didn't hesitate to take pirated stock.

Mastertronic had a lot of sub-labels, was it important to keep the brand fresh?
Yes, they were always looking at ways to keep the range exciting for retailers and consumers. The MAD range, priced at £2.99 also meant they had a better margin and a bigger budget to put into development. Development skills and consumer expectations were moving quickly, so we were keen to keep pace and stay ahead.

How important were review scores?
A good score was stickered onto the game's packaging and featured in ads, which was definitely useful for consumers. Our games sat alongside higher priced games in major outlets, so anything that made them stand out and look like a better choice was always helpful. Reviews became increasingly important to the point where distributors demanded to know what kind of review scores we expected or had gained, before they'd place an order.

THE HIT SQUAD

PAUL HUGHES ON ASSEMBLING OCEAN'S COMPILATIONS



Why were compilations important to companies like Ocean?
I guess, put simply: money! The return on investment was pretty high. For the consumer it was great value for money, for the publisher it was reasonably simple to put together for little outlay.

What did working on a compilation entail?
This wildly varied depending on where the titles originated from and the media they appeared on. If the titles were internal, chances are I'd already mastered them and so had either the raw unprotected code, or the master maker already to hand. It generally started though with Lorraine (the assistant software manager) coming over with the names of the games that were to appear on the title and from there I'd have to work things such as the optimal order (which sides) to put the games on in order to keep the tape length as short as possible (less tape equalled less cost). The same applied to the disk versions.

Were there difficulties creating them?
With externally licensed titles, if I was lucky I'd get a master maker to just hand off to the duplicators. In some cases, I'd get a disk of raw code to wrap up with a fast loader and the various protection trickery. In a surprising amount of cases, I just got a cassette of the game and had to break into the protection, inject our own load routines in and then remaster the title again.

Did you license games from other companies?
Oh yes, there were many deals done with Activision over the years – games such as *Ghostbusters 2*, *The Last Ninja*, *Karnov*, *Predator*, *Rampage*, *IK+* all featured on Ocean compilations.

If a developer's game appeared on a compilation after it had already been released were they paid again?
If it was a title developed internally, or an Ocean licensed conversion done out of house, generally not. Internal developers were salaried and paid discretionary bonuses, so there were no royalties at the time. External developers generally got a one-time fee so weren't due anything for compilations.

What's the best compilation you worked on and why?
Gosh! There were a lot of them! *The Magnificent Seven* was a pretty good one from what I recall, especially because it contained eight titles! All of the titles were developed by Ocean/Imagine so I'd imagine it was a very tidy little earner for them.

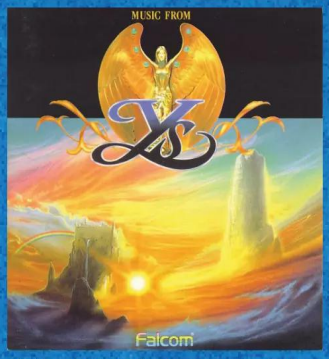
TREMENDOUS TUNES

THE EIGHTIES WAS THE ERA WHERE VIDEOGAME MUSIC TURNED FROM SOUND EFFECTS AND SHORT JINGLES TO AN ARTISTIC SPECIALISM IN ITS OWN RIGHT, ALLOWING FOR A GOLDEN AGE OF EXPERIMENTATION

Though the games of the Seventies certainly had their distinctive sounds, from the bassy boom of *Asteroids*' explosions to the relentless march of the *Space Invaders*, gaming audio really came of age in the Eighties. One man noted for his love of game music from this era is Chris Abbott, owner of C64Audio.com. While he's most associated with the SID, his love of game music actually predates his ownership of Commodore's most popular machine. "The Atari 400 was my first machine, so I have a really soft spot for POKEY, which was a chip they put a lot of thought into. Hearing *Preppie!* and *Shamus* for the first time on the winter's night I got my first computer was life-changing." Once he got the C64, he discovered the work of a range of talented composers, including Rob Hubbard, Martin Galway, Ben Daglish, Maniacs Of Noise and Tim Follin. While those composers made their names here, in Japan the likes of Koji Kondo, Yuzo Koshiro, Hiroshi Kawaguchi, Shinji Hosoe and Nobuo Uematsu began their own careers, creating memorable tunes in the arcades and on home consoles.

Of course, while the musicians were names you came to know, their tools were just as important and the decade saw rapid technological development. "Going from the VIC-20's synth chip to the wonder of the C64's SID was a huge leap, but going from 'essentially beepers' to Atari's four-voice POKEY chip was almost as big a jump. The guys behind the SID went on to Ensoniq to do amazing stuff with wavetables that seemed to go nowhere commercially. They were years ahead of their time." FM synthesis became popular in arcades from the mid-Eighties and eventually filtered into the home in systems like the Amiga and Mega Drive. By the end of the Eighties it was even possible to experience games with CD audio, if you were lucky enough to own a PC Engine with the appropriate add-on. Freed from restrictions, composers were able to reimagine the chiptunes of games like *Ys* and *Wonder Boy III: Monster Lair*.

Today, Eighties game music is reimagined in a similar way by composers in projects like OCRemix and Chris' C64Audio.com. When asked what keeps people interested in his own project, Chris notes a few factors. "Partly because they're full of talented people including original composers like Rob Hubbard, and because they feel part of that community: it's a bit of a family," he explains. "Partly because people like 'the same but different' and to have tunes they love have more love poured in. And partly because the projects are so ambitious, technically and creatively: who else would risk a multi-decade project to get a whole symphonic orchestra to do C64 tunes? And we deliver. Eventually!"



» By the end of the Eighties, Japanese gamers could buy official CD releases of their favourite soundtracks.

» [Arcade] Developments like FM synthesis chips were initially restricted to expensive arcade hardware, before going mainstream.

» [C64] Some games shared loading themes, like the excellent one accompanying *Rastan* and other Imagine Software games.

MAGNIFICENT MAGAZINES

WITH NO INTERNET AND LIMITED TV TIME FOR GAMES, THE ONLY WAY TO GET INFORMATION ABOUT NEW RELEASES WAS THROUGH THE MAGIC OF THE PRINTED PAGE

While plenty of column inches had been dedicated to the success of Atari and *Space Invaders* during the Seventies, the Eighties marked the first time that we got publications wholly dedicated to electronic games. *Computer & Video Games* opened the floodgates in the UK with its debut November 1981 issue, and by the mid-Eighties we had a formidable range of magazines delivering all the information gamers craved.

One reader who remembers those days well is Vinny Mainolfi, who was introduced to games magazines through issues of *C&VG* and *Personal Computer World* that came with his first computer. For him, the appeal of the magazines was one very distinctly tied to the Eighties. "Both magazines were a great source for game listings that I could type into my good old TRS-80 – bless it. I was more excited about the game listings than the actual game reviews." With the early home computer market being so competitive, those multiformat magazines were key to begin with. But as market leaders emerged, so too did single-format magazines. "I treated myself to a brand-new Commodore 64 and totally fell in love with *Zzap!64* – mainly the Julian Rignall years. Seeing the game reviews such as *Way Of The Exploding Fist* and *Ghosts 'N Goblins* just blew me away. It was a different style of magazine that really fitted the times and vibes that we were all experiencing during our teenage years – the hair; the clothes; the music…"

While the format of news, reviews, tips and screenshots would define gaming coverage for years to come, the graphical limitations of the era meant that creativity was needed for memorable covers, with artists like Oli Frey providing memorable illustrations. "Many of the early covers of *Zzap!64* hold a specific memory for me: when I purchased them, what the weather was like at the time; how happy/unhappy I was; what music I was listening to," says Vinny. "Those covers were *that* powerful that they evoke so much feeling and memories." Also hand-drawn were the portraits of the magazines' writers, who felt like people you could connect to. "It's what we craved: our very own rock stars of the gaming industry; and it's something we needed to help boost our confidence about playing computer games – we were no longer spotty, greasy-haired, BO-stinking geeky teenagers," says Vinny. "The personalities helped to raise the profile of the gaming industry as a whole."

Fondness for the magazines of the time led Vinny to create *FREEZE64*, a dedicated Commodore 64 magazine. "Many of our readers have said that receiving and reading *FREEZE64* is like having *Zzap!64* again. This is probably the highest compliment I could ever receive," he says. "But my intention is to avoid copying any style that *Zzap!64* had back in the day. What I do try and mimic is the feeling and anticipation of waiting for the next issue, and then receiving it. That excitement and build-up is one of my favourite experiences of magazines from back in the Eighties."

MEMORABLE MELODIES

FIVE CLASSIC TUNES THAT BRING THE NOSTALGIA FLOODING BACK

MONTY ON THE RUN

TUNE

Main Theme

COMPOSER

Rob Hubbard

There are any number of games you could have chosen to represent Rob Hubbard's work, but we particularly like the frenzied accompaniment to Monty Mole's third outing. The lengthy piece incorporates a number of amazing sections, including a memorable 'guitar' solo in the middle.

THE LEGEND OF ZELDA

TUNE

Overworld Theme

COMPOSER

Koji Kondo

This jaunty little theme definitely feels like the right fit for a game that plunges you straight into the deep end of an adventure, with nothing but some weaponry and your wits to protect you. Though the tune lasts just 40 seconds before looping, it remains the basis for the series' themes to this day.

OUT RUN

TUNE

Magical Sound Shower

COMPOSER

Hiroshi Kawaguchi

At a time when music was still a luxury in many games, Kawaguchi's access to arcade hardware allowed him to do pioneering work with FM synthesis and even add a choice of soundtracks. When we daydream of sunny shores lined with palm trees, this is our musical accompaniment.

DRACONUS

TUNE

Title theme

COMPOSER

Adam Gilmore

Time and talent can do great things, and by the late Eighties Adam Gilmore had really learned to wrestle the best from the Atari 8-bit's POKEY chip. The title theme for *Draconus* really made the old hardware sing, and set the tone for the game – which it had to, since there was no in-game music.

XENON 2: MEGABLAST

TUNE

Main Theme

COMPOSER

Bomb The Bass/David Whittaker

Adapting the track *Megablast* (Hip Hop On Precinct 13) was a stroke of genius for the always trendy Bitmap Brothers. As well as being one of the earliest signs of the licensed music boom that would happen in the Nineties, it was something that demonstrated the power of the 16-bit machines.

MY FAVOURITE LOADING SCREENS

STARSTRIKE II BY GRUM

ZX SPECTRUM, 1986

"A highly detailed and expertly rendered digital version of the game's cover art. The amount of detail in it used to give me a headache, and I wished I could draw something as good as this on my own Spectrum."

RECOMMENDED READING

THE MAGAZINES THAT DISTINGUISHED THEMSELVES FROM THE PACK

COMPUTER & VIDEO GAMES

LAUNCH YEAR

1981

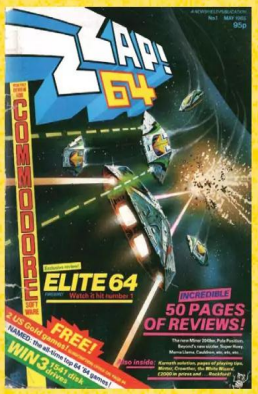
The first name in UK videogames magazines didn't just succeed by being the first magazine to market. As the decade went on the magazine kept itself relevant by adapting its format, with a bigger focus on reviews as the years went on, and eventually creating demand for consoles with import coverage.

CRASH

LAUNCH YEAR

1984

Newsfield's first big success in games magazines was driven by its youthful staff, who shared the readership's enthusiasm for the games they were covering. The magazine's team was keen to use real screenshots and positioned it as a buyer's guide, focusing on reviews and tips over type-ins.

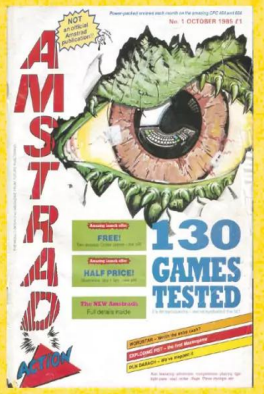


ZZAP!64

LAUNCH YEAR

1985

Realising that Commodore gamers would probably enjoy a magazine with a similar approach to *Crash*, Newsfield launched this sister title. Writers such as Gary Penn and Julian Rignall soon became familiar names to the magazine's readers, and regularly beat them in gaming challenges.



AMSTRAD ACTION

LAUNCH YEAR

1985

Yes, we're choosing a Future title here – but let's be honest, there's a reason that it ran for ages. If you had Alan Sugar's machine, this was the right title to go for, especially when the Christmas issue included a cover tape. Later on, those tapes would became staple of the computer magazine market.

ACE

LAUNCH YEAR

1987

This multiformat magazine was trying to be a bit different from the competition, with a broader outlook on computer entertainment and a tone that aimed at an older teen audience. For some reason, it scored games out of 1,000 rather than the more common scales, which we always liked.

LICENCE TO THRILL

IN THE EIGHTIES, THE LICENCE WAS KING. GAMERS WERE OBSESSED WITH PLAYING THE LATEST ARCADE GAMES IN THE COMFORT OF THEIR HOMES, WHILE LICENCES BASED ON MOVIE AND TV SHOWS WOULD DOMINATE THE CHARTS. GARY BRACEY EXPLAINS WHY THEY WERE SO POPULAR

Licences really began to come of age in the Eighties and publishers would fight over themselves to earn the rights to convert the most popular arcade games, films and TV shows. One company that excelled at this was Ocean Software. Many developers would base their games on arcade classics including Jon Ritman, Geoff Crammond and Jeff Minter, and Ocean was no exception. "Before we became 'Ocean', we were 'Spectrum Games' and doing rip-offs of classic arcade titles," explains Gary Bracey who worked at Ocean as its software director. "Then the opportunity to license the official *Hunchback* coin-op was presented to Jon Woods and that was the start (a little before I joined the company). That was the first licensed Ocean game, and we soon realised that a recognisable brand was a great marketing hook so Jon focused his early energies into the acquisition of such licences."

One of the early benefits of acquiring arcade games was that the cost of the licence was relatively cheap. It led to a number of conversions appearing under both the Ocean label and its acquired Imagine Software label. "Jon stayed very much at the forefront of that, having established great relationships with the likes of Konami and Taito in Japan," Gary continues. "In the early days, we were given carte blanche to adapt whichever of their games we wanted, but not long after the massive success of the NES, those companies realised they could make much more money by doing it themselves and so it became a lot more challenging to get the high-profile coin-op rights."

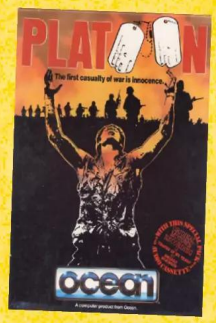
Interestingly, while Ocean had success with the likes of *Hunchback* its early TV and film adaptations didn't find the same critical success and we're keen to know why. "Errr... because they were shit?" says Gary. "The problem was that in the early days, Ocean had a very small in-house dev team and had to 'farm out' much of its development to external freelancers," he continues. "There was little-to-no oversight of these developments and so those external studios weren't motivated to do much. This resulted in very poor quality products... if they even materialised at all. This was one of the reasons I was brought in – to basically oversee and manage the development (both in-house and external), because there was no one doing it!"

Gary's introduction saw a rise in overall quality across the publisher's output, and while Ocean still produced some stinkers during his tenure (the C64 version of *Chase HQ* and *Miami Vice* immediately spring to mind) there's no denying it released some of the best licences of the time. Of course, it wasn't just Ocean that saw the merits of licensing coin-ops and films, and plenty of

MY FAVOURITE LOADING SCREENS

FAIRLIGHT BY JACK WILKES
AMSTRAD CPC 1985

"I love the atmosphere portrayed here. A beautiful sunny day looking out the window of your castle at the boat out on the lake. A friendly rook visits in the hope for a few scraps of food. Also, it actually helps you with the game and gives you to a clue to the location of a hidden room."



» Ocean's *Platoon* and *RoboCop* featured different gameplay mechanics to suit specific scenes from the movie.

A LICENCE TO PRINT CASH

GARY BRACEY'S STEPS TO 80S LICENSING SUCCESS

1 "AIM FOR A CHRISTMAS RELEASE, WHICH WAS THE PEAK SELLING PERIOD OF THE YEAR"

2 "SELECT A HIGH-PROFILE LICENCE. ONE THAT'S IDEALLY RECOGNISED BY 90% OF PEOPLE"

3 "MAKE SURE YOUR CHOSEN LICENCE IS A VERY CURRENT ONE. THIS IS IMPORTANT FOR OBVIOUS REASONS"

» [NES] The *Teenage Mutant Ninja Turtles* NES pack achieve the same success for the NES that Ocean's *Batman* managed for the Amiga.

» [C64] Audiogenic's *Emlyn Hughes International Soccer* married a popular celebrity to a mechanically great football game.

other developers were eager for a slice of the pie. Activision tackled various movies and coin-ops, including many by Sega. If you enjoyed Capcom games, odds are a home version would be published by US Gold, while the likes of Alternative Software and Hi-Tech Software specialised in TV and cartoon licences. Elite dabbled in both ponds, delivering arcade conversions of *Commando* and *Paperboy* and tackling things as diverse as *Frank Bruno's Boxing* and *Mike Read's Pop Quiz*. Firebird produced the likes of *Bubble Bobble*, *Flying Shark* and *Mr Heli*, while Mastertronic used a Skips tie-in to flog *Action Biker* on various 8-bit systems. Chances are, if something was popular on the TV, silver screen or even the lunch canteen, a publisher would find a way to capitalise on it.

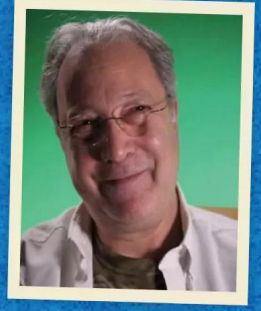
One of the reasons licensed games were so popular with publishers in the first place was due to the low cost of acquiring them, although that did change. "They were really very cheap," admits Gary. "Movie companies just saw it as incremental revenue – not a big earner – and so we were able to acquire them relatively cheaply. *RoboCop* changed all that and was the game that made Hollywood realise that they could generate meaningful income from videogame licensing. That was the last 'cheap' licence – I think we paid around $20,000 for all digital rights – all computer platforms, all console platforms, coin-op and pinball!"

RoboCop is worth highlighting, as along with the earlier *Platoon* it popularised an approach Ocean often took with its film licences, cleverly cutting the games into minigames to capture key elements of the movie. "Simon Butler was definitely a key contributor to the concept, as I think the first successful iteration was *Platoon*," Gary recalls, admitting it was a team effort. "I remember we needed to read the script and pick out key scenes which we thought might translate well interactively. *Platoon* had a number of such scenes but for different action scenarios and so the brainstorm session resulted in, 'Well, why don't we do all of them, rather than just picking one?' Of course, this meant significantly more development work (and therefore time) as we were making several games in one. But the formula was a good one and worked in such titles as *RoboCop* and *The Untouchables*."

That formula worked well for Ocean, and it continued to have success with numerous licences well into the late Nineties until it was eventually purchased by Infogrames in 1996. Games based on films and TV remained popular with gamers, only really slowing down with the current generation of systems. Nowadays, titles like the PS4's *Spider-Man* are the exception rather than the norm and news of a newly licensed game typically fill us with dread. In the Eighties however, licences were celebrated, mainly because they allowed us a way to enjoy our favourite movies, TV shows and arcade games on the home systems we loved. ✱

4 "MOST IMPORTANTLY – THE FEATURED GAME HAS TO BE GREAT, SO IT NEEDS TO BE WELL-REVIEWED."

5 "IF POSSIBLE, BUNDLE THE GAME WITH ONE OF THE HARDWARE FORMATS AS IT GETS MORE IN-STORE AND IN-PRESS PRESENCE"



DIGITAL BLOCKBUSTERS

YOU WON'T FIND ANY CASH GRABS HERE

STAR WARS: THE EMPIRE STRIKES BACK

YEAR
1982

PUBLISHER
Parker Brothers

▶ The *Star Wars* licence got off to a great start with this frantic blaster from Parker Brothers. While it admittedly shares many elements with Eugene Jarvis' *Defender*, it manages to up the ante by tasking the player with taking out gargantuan AT-AT Walkers before they can destroy Echo Base's power generator.

GHOSTBUSTERS

YEAR
1984

PUBLISHER
Activision

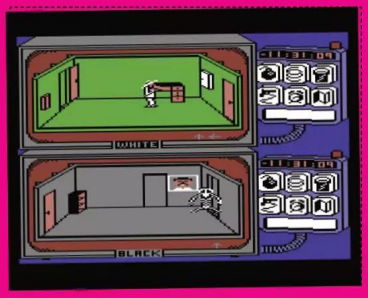
▶ The huge success of the *Ghostbusters* movie meant a film tie-in was inevitable. Activision dutifully delivered and David Crane proved that busting ghosts yourself was just as fun as watching the critters meet their end on the silver screen. It's notable for having largely great ports and being one of the earliest film licences to seemingly appear on everything.

SPY VS SPY

YEAR
1984

PUBLISHER
First Star Software

▶ A good videogame licence is one that effortlessly manages to capture the spirit of its source material and the early *Spy Vs Spy* games manage that brilliantly. It's best played with a friend as you each play one of the famous rival spies as you seek out items you need and lay fiendish traps for your opponent.

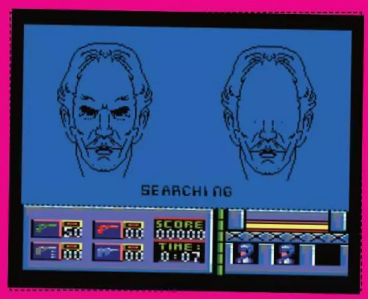


ROBOCOP

YEAR
1988

PUBLISHER
Ocean Software

▶ While *RoboCop* wasn't the first Ocean game to break down key elements of a film into neat bite-sized gaming chunks, it's certainly the one that perfected the formula. The core run-and-gun levels are interspaced by some excellent minigames that range from an identikit match-'em-up to saving a woman from an assailant. Additionally, all the available versions are great fun, too.



OPERATION WOLF

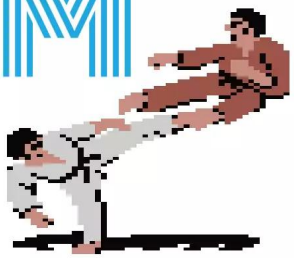
YEAR
1988

PUBLISHER
Ocean Software

▶ There are a whole host of great arcade conversions to cover, but this wonderful effort from Ocean is one of our favourites because no home version was a duffer. The 16-bit offerings are extremely accurate to the arcade original, but even the 8-bit ones are great fun. The non-Ocean console ports are good, too.

» Eighties bedroom coder David Jones (right) donating his development system to the Centre For Computing History.

RISE OF THE BEDROOM CODER



Home coding began in the early Seventies and continues to this day, but the indie developers of the Eighties were special. **Retro Gamer** learns how a generation of young computer enthusiasts rebuilt the games industry from their bedrooms

WORDS BY RORY MILNE

By 1983, the golden age of US arcade gaming was waning, and the videogame crash had decimated America's slice of the industry. The meagre output of UK and European coin-op and console developers did little to negate this implosion, and the Japanese games industry was largely focused on its home market. But as seasoned developer David Perry explains, an unlikely solution to this seemingly hopeless situation lay in the hands of youthful home computer owners. "I grew up in the middle of nowhere, and it was freezing cold outside!" David says of his northern Irish childhood. "So I got a ZX81, and I had a little black and white TV in my bedroom. I was making these little games, and I sent one to *Interface* magazine. As a kid I was just so excited to be in a magazine, but I didn't understand that I was going to be paid. I think my first cheque was for £450. That was something that I wasn't expecting, and it turned me into a bedroom coder."

Industry legend John Romero tells a similar story, although he grew up in the States and favoured a US computer to a British one. "When my parents finally got an Apple II at home I was basically *done* going outside," John recalls. "The only place I had to code was my bedroom. Publishers were just people in their houses, they didn't have internal teams, and the games they were publishing were made by indies from their bedrooms."

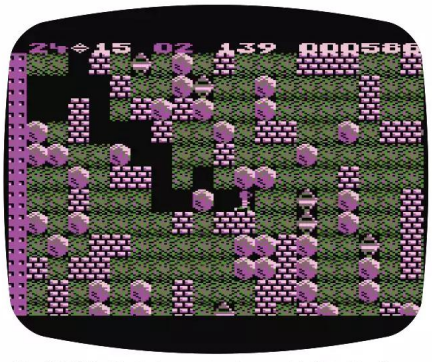
Like David Perry, John's first published game appeared as a type-in listing in a magazine. More followed, and soon the schoolboy developer was coding around the clock to the detriment of his studies. "I made 60 games in the Eighties, plus I had to go to high school!" John laughs. "I was writing code on paper in class, and I barely got out of school because I didn't do any school work. Bedroom coding was all about self-motivation and learning on your own, and the only thing that I could use to judge how well I was doing was the commercial games I was playing."

Budget game specialists Philip and Andrew Oliver took a similar approach to their educations as John Romero when they first started making games, and their hours spent programming only increased after they left school. "When we were at school it was juggling coding and schoolwork, doing the bare minimum of homework and just scraping through exams," Philip remembers. "The minute we left school it was alarm clocks on at seven o'clock in the morning and working through to one or two in the morning. That was every day, seven days a week, 365 days a year – including Christmas."

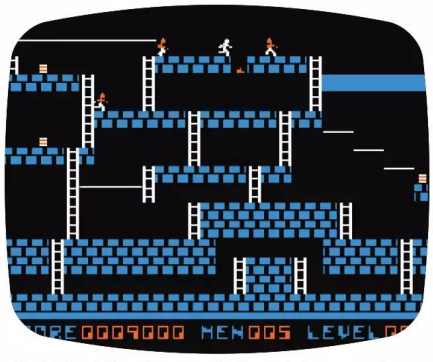
Rather than creating magazine type-ins, like John Romero and David Perry, or posting games off to publishers, like the Olivers, acclaimed developer Steve Crow had his early efforts released by a family friend's commercial software firm. "I started writing videogames at school, and I had a friend called Justin Whisker," Steve reminisces. "His dad was a banker, and he was going to set up this company where I would get 49 per cent. My dad said: 'Let me run this by one of my friends,' and his friend said: 'You don't want to do that, because you won't have any ownership of it.' But this friend did business software, and he said: 'Me and my partner will fund Steve.'"

While Steve was still at school, a slightly older David Jones had started work as a trainee surveyor, although a subsequent redundancy saw him turn his coding hobby into a profession. "I'd moved back to living ▶

» [ZX Spectrum] The hero of Spectrum bedroom coder Sandy White's *Ant Attack* scarpers having rescued his girlfriend.



» [Atari 8-bit] Rockford takes a rest under a rock in Peter Liepa's home-coded debut, *Boulder Dash*.



» [Apple II] *Lode Runner*'s protagonist blows a hole in a game that Doug Smith started developing while at university.

BUILT ON BEDROOM CODING

THE FIRMS THAT MADE BEDROOM CODING THEIR BUSINESS

LLAMASOFT

■ The trading name of surreal shoot-'em-up specialist Jeff Minter, Llamasoft alternated between self-publishing and freelancing for publishers during the Eighties, making home-baked classics like *Gridrunner* and the *Mutant Camel* series. Besides a few high-profile staff positions in the Nineties, Jeff has been a home coder ever since.

Broderbund

■ Founded in 1980 by Doug and Gary Carlston, Brøderbund was set up with a view to selling the Apple II games that Doug was developing in his spare time. The company went onto publish some of the biggest US home-coded hits of the Eighties, including Dan Gorlin's *Choplifter!*, Doug Smith's *Lode Runner* and Jordan Mechner's *Karateka*.

HEWSON

■ Hewson had its own in-house development team, but the vast majority of its success came from working with freelance developers. Andrew Braybrook and Steve Turner were early signings, and as the Eighties unfolded bedroom coders like John Philips, Raffaele Cecco, Steve Crow, Jon Hare and Jeff Minter all graced the Hewson label.

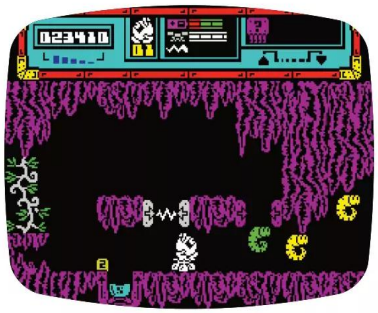
MASTERTRONIC

■ Budget game pioneer Mastertronic originally sold half-decent titles for low prices, but as time went on the quality of the firm's output markedly increased. The company didn't have its own in-house team, and instead published a wealth of indie coders, including big names like the Darling bothers, David Jones and Shaun Southern.

Codemasters

■ Founded by former bedroom coders David and Richard Darling, Codemasters rapidly expanded thanks to the Eighties' home coding scene. The firm secured talent like the Oliver twins – best known for their *Dizzy* series and simulator games, the latter of which became a Codemasters franchise that various indie coders contributed to.

with my parents, and I got word that someone was looking for a programmer to write games for them," David reflects. "That's how I met Albert Owen. The first game I wrote was *Bonkers*, but Ray never managed to get it sold properly, so when we started working on *Finders Keepers* he got in touch with Mastertronic, and it all went from there."



» [ZX Spectrum] A youthful Steve Crow coded all of his games from his bedroom rather than working in-house.

» [Apple II] Jordan Mechner spent years bedroom coding games before he got a publishing deal for *Karateka*.

As was common for Eighties bedroom coders, David thought nothing of working long hours, although he took advantage of his proximity to his publisher when the pressures of lone working got to him. "I would work from when I got up," David recalls, "and then when it got to evening time I'd start to get tired, and because it took ten minutes to assemble a game I got into the habit of lying down and getting a catnap. Then when it had finished I would wake myself up and carry on. So in terms of hours put in it was quite a lot, and quite intense. But it was fun, except every now and then I'd get a bit fed up working on my own, and so I'd go into the Mastertronic office where people would encourage me."

At around the same time, a teenaged Steve Crow was struggling to find himself a supportive publisher after a deal with his father's friend to release his games came to an end. "I was halfway through *Wizard's Lair*, but I couldn't get anyone to publish it," he sighs. "I was at the point where I was just going to put it on the front of *Crash* magazine. I had companies like British Telecom saying: 'Oh, we'll give you £2,000 for it,' but I was thinking I'd rather give it away than accept peanuts. Then, finally, Bubble Bus gave me an offer with a proper royalty. Bubble Bus was just in the next town over from me, and it did really well with *Wizard's Lair*."

Unlike Steve Crow and David Jones, the mid-Eighties saw David Perry leave bedroom coding behind in favour of an in-house position with a publisher, but two years later he went freelance with artist Nick Bruty. "We built benches in a bedroom at my mother's house, and the two of us worked there," David notes. "Nick was a game-changer, because not only was he amazing at art, but he also had lots of really good ideas. We found that every time we did a licensed game it would end up helping us, so we would pop in and out of doing that and then do our own things as well, and that was really fun."

As the Eighties drew to a close, John Romero took a staff job too, but he spent his spare time bedroom coding and setting up id Software. "We were working at Softdisk, and then when I went home I was programming more games, and selling those back to Softdisk," John beams. "By 1992, we were making *Wolfenstein*, literally in a bedroom, because we finally got an apartment just for the company."

The Olivers' first experience of studio development came in the early Nineties, although a year of this convinced them to give bedroom coding a second chance. "We had bought a flat in Leamington Spa, and we were driving into work everyday at Codemasters' 'portacabins'," Philip grimaces. "We thought they were *horrible*, so we decided to work at the flat. But there was no artist, so we invited an old school friend who had done an art degree to live there and do the art for us. But that started to get a bit tight, especially since we both ended up getting girlfriends! So we went and got an office."

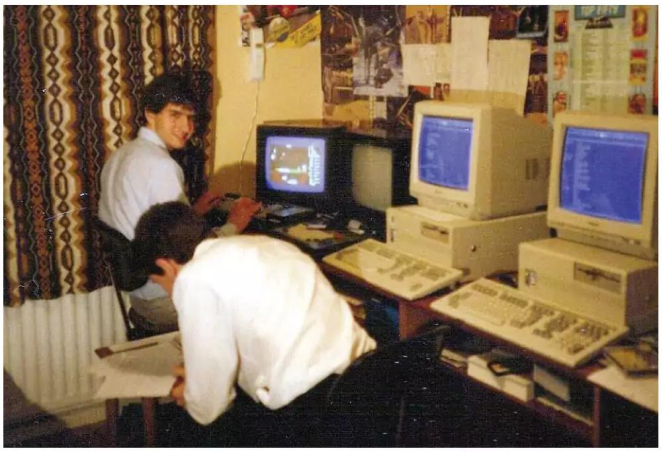
It was the mid-Nineties before talented coder/artist Steve Crow traded bedroom development for a studio position, but before then he decided to focus on creating game art, following the trying development of *Firelord* for Hewson Consultants. "Andrew Hewson used to go around his contract people, and I remember him visiting once or twice at my house when I was working out of my bedroom," Steve recollects. "I just did graphics for Hewson after that, and all of the people who worked there were awesome. Guys like Mark Cummings, and Dominic Robinson who did *Zynaps*, were just super cool."

Like Steve, *Earthworm Jim* coder David Perry has some great memories

» [Amstrad CPC] Dizzy finds a coin in the Oliver twins' homemade hit platformer *Fantasy World Dizzy*.

» [C64] Classics like *Nebulus* and *Eliminator* were developed by John Philips while he was a bedroom developer.

> "The best part was that we could make anything we wanted. You saw that in our games; they were just an explosion of ideas"
>
> **DAVID PERRY**



» The Oliver twins hard at work in their bedroom development studio, circa 1988.

> "The only place I had to code was my bedroom. Publishers were just people in their houses, they didn't have internal teams"
>
> **JOHN ROMERO**

of the bedroom coding era of the Eighties, although he remembers the tech of the time less fondly. "The best part was that we could make anything we wanted," David grins. "You saw that in our games; they were just an explosion of ideas. But the equipment back then was pretty flaky. So when my television started to act wonky I had to hit it to make it work again. Each time I would have to hit it a little bit harder, and I would end up having to hit it with a telephone book just to finish a project! "

When asked for his thoughts, the co-creator of the *Dizzy* games Philip Oliver argues that Eighties bedroom coding wasn't all good, but he concedes that there were highs as well as lows. "It was a really fun time when you look back on it," Philip considers, "but when you were actually doing the work it was horrible. There were a few nice bits. Taking cheques down to the local bank once a quarter was a high point. They were over £10,000 each, because our games had started to sell.'

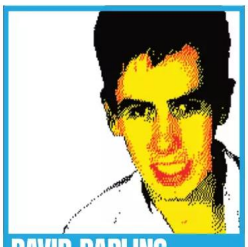
Former Mastertronic star programmer David Jones offers an equally bittersweet assessment of the golden years of bedroom coding, tinged with regret that he wasn't able to put off taking a studio job. "Bedroom coding was about individuals who put the effort into the technical side having the opportunity to express themselves in a new medium," David observes. "I miss the bedroom coding era, and I would have been a bedroom coder for a lot longer if things hadn't changed all around me."

Given the final word, John Romero is unequivocally positive about the Eighties bedroom coding movement that reinvigorated the games industry, which perhaps explains his on-going commitment to bedroom development. "I *loved* the Eighties bedroom coding era," John enthuses. "There was no internet, and you were as focused as a human could be. But what I really liked, and I'm still doing this today, was being able to experiment with stuff and take chances at home that you would never do at a company." *

» [C64] Bedroom coders the Rowlands brothers supported the C64 long after the system's commercial prime.

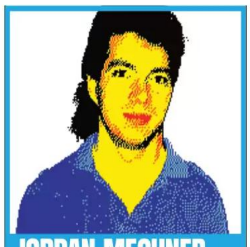
BRILLIANT BEDROOM CODERS

INDUSTRY VETERANS THAT HAD HUMBLE BEGINNINGS



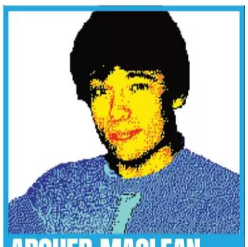
DAVID DARLING

After self-publishing coin-op clones in the early Eighties, David and his brother Richard began freelancing for Mastertronic, and by 1985 they owned half of the company. The brothers next went independent with Codemasters, and built it up by publishing games created by bedroom coders. David is now CEO of the app developer Kwalee.



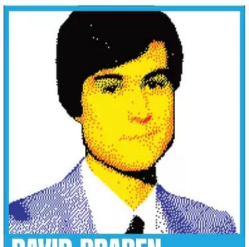
JORDAN MECHNER

Best-known for developing Apple II hits *Karateka* and *Prince Of Persia* as a young bedroom coder, Jordan Mechner went on to design various follow-ups to his rotoscoped platformer, as well as working with Ubisoft to help reboot the series in 2003. The developer is currently contributing to a book about the making of the original *Prince Of Persia.*



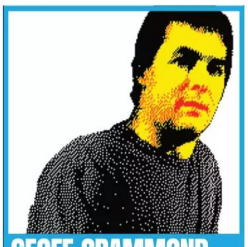
ARCHER MACLEAN

Archer Maclean wasn't prolific during the Eighties, but the quality of the then-youthful coder's games more than made up for this. His debut *Dropzone* was a fresh take on the coin-op *Defender*, and *International Karate* redefined the beat-'em-up. Archer next focused on pool and snooker titles, before founding his own firm in 1997.



DAVID BRABEN

Although David Braben could have retired from games development a rich man after co-creating *Elite* with Ian Bell while the two were students at Cambridge University, he instead went on to work on the Archimedes launch title *Zarch*, and then the *Elite* sequel *Frontier.* David next set up Frontier Developments, where he is still CEO.



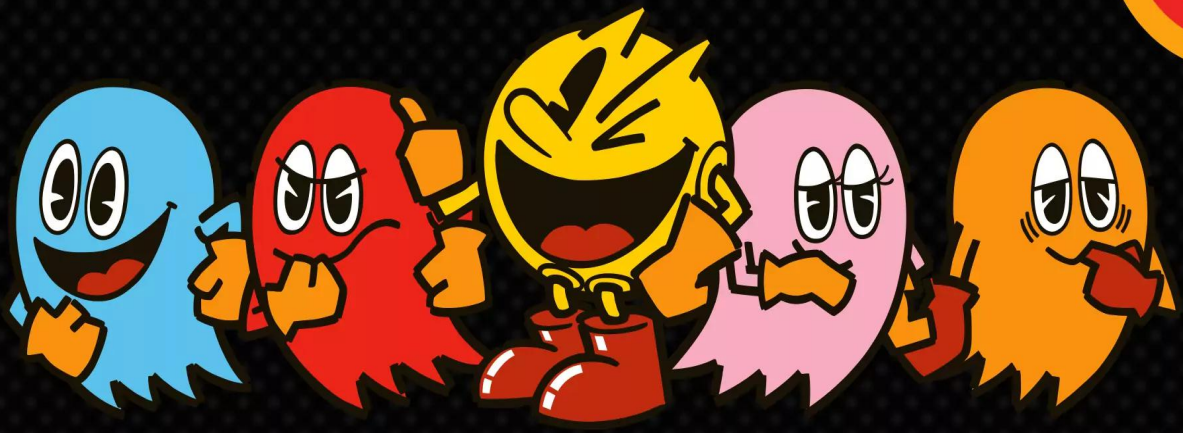
GEOFF CRAMMOND

After developing a *Space Invaders* tribute and a spitfire simulator on a part-time basis, Geoff Crammond became a full-time home coder and created the BBC Micro classics *Revs* and *The Sentinel.* Geoff then produced *Stunt Car Racer* for the 16-bits, and spent the next ten years making his popular *Grand Prix* series for PCs.

PAC-MAN 40TH ANNIVERSARY

NAMCO'S YELLOW MASCOT STANDS PROUD AS THE INDUSTRY'S FIRST RECOGNISABLE VIDEOGAME STAR. AS PAC-MAN CELEBRATES HIS 40TH YEAR, WE FELT IT WAS THE IDEAL TIME TO SIT DOWN WITH PAC-MAN CREATOR TORU IWATANI AND QUIZ HIM ABOUT HIS GROUNDBREAKING GAME

WORDS BY NICK THORPE AND DARRAN JONES



40 YEARS OF PAC-MAN

It's astonishing to think that one of the biggest gaming phenomenons of the Eighties was contained within just 24 kilobytes of data. Coded by Namco's Toru Iwatani and released for location testing in Shibuya, Tokyo in May 1980 after 17 months of gruelling coding, *Puck-Man*, as it was then known, went down well with those that were able to play it. Encouraged by those early playtests, *Pac-Man* soon went on full release in Japanese arcades, but it wasn't until Iwatani's game reached the shores of America and the rest of the world that Namco's arcade game really achieved planetary domination.

Before it landed in western arcades, Namco America requested numerous changes to *Puck-Man*, including renaming three of the ghosts from Akabei, Aosuke and Guzuta to Blinky, Inky and Clyde (only Pinky retained its original name). However, the biggest change was undoubtedly the request to change the game's title due to worries over potential vandalism (the entire story entered pop culture history thanks to Bryan Lee O'Malley's *Scott Pilgrim* graphic novel and Edgar Wright's subsequent film adaptation). *Puck-Man* become *Pac-Man*, and with this new moniker the game became absolutely huge, much to the delight of Midway Games, as it had agreed to distribute both *Pac-Man* and *Rally-X* for Namco.

Pac-Man became a worldwide success, and numerous sequels and merchandising opportunities followed in a gigantic tidal wave of *Pac-Man* fever that swept across the globe. Media attention, high score competitions and a constant stream of paraphernalia helped turn Toru Iwatani's character into a household name, a legacy that has now endured for an impressive 40 years. The success of *Pac-Man* led to a slew of imitators and clones, particularly in the home, including *Snapper*, *Munch Man*, *Snack Attack* and *KC Munchkin!*. Some of these games received lawsuits from Atari, as it had secured the rights for home use and had released an official conversion for the Atari 2600 (you can read more about that in issue 179). As annoying as these clones were for Atari, they highlighted just how much demand there was for Namco's yellow pellet-muncher, who continued to find success in the arcades throughout the Eighties and early Nineties, and eventually, home computers and consoles.

The legacy of *Pac-Man* and its importance to gaming is well-known thanks to excellent documentation and the sheer cultural impact Iwatani's game has had in the last four decades. American games writer Cat DeSpira revealed in a brilliant 2019 article how the paint on left-hand sides of *Pac-Man* cabinets was worn down due to the way arcadegoers gripped it during play (you can read about it at bit.ly/pacmanuntold) while Alex Wade and Van Burnham are just a few of the authors who have examined the cultural importance of the coin-op classic. As Namco continues to celebrate *Pac-Man*'s anniversary with a host of new games and products this year, it's obvious that our obsession with Toru Iwatani's iconic creation shows no sign of diminishing any time soon. ▶

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MEET THE PAC

TORU IWATANI
Creator, *Pac-Man*

TADASHI IGUCHI
Director, *Pac-Man Championship Edition* series

JON STOODLEY
Pac-Man high score expert

PHILIP OLIVER

ANDREW OLIVER
Released *Pac-Man World 3*

JERRY BUCKNER
Cowriter, *Pac-Man Fever*

LEE KIRTON
Sub-chief *Pac-Man* officer EMEA

VAN BURNHAM
Author, *Supercade*

SPECTRAL SABOTEURS

HEROES ARE ALL WELL AND GOOD, BUT THEY NEED VILLAINS TO CONTRAST WITH. ENTER THE GHOSTS, PAC-MAN'S LONG-TERM ADVERSARIES AND THE DRIVING FORCE BEHIND THE GAME DESIGN. TORU IWATANI EXPLAINS THEIR IMPORTANCE AND HELPS US TO UNDERSTAND THEIR UNIQUE QUIRKS

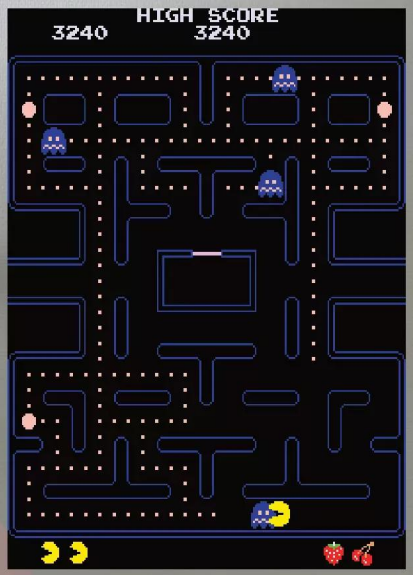
When retro gaming rappers Duane and BrandO did a song based on *Pac-Man*, half the performance was from the perspective of the ghosts, and that's no less than they deserved. After all, what would Pac-Man be without them? He'd just be a gluttonous chap wandering around a confined space and eating everything in sight, rather like us during lockdown. The big secret is that while Pac-Man is the star of the show, from a game design perspective, the quartet of persistent persecutors that inhabit Pac-Man's maze are arguably far more important than he is.

Unlike most videogame enemies of the time, the ghosts in *Pac-Man* each have identifiable behaviours that distinguish them from one another. This was actually made clear to players on the title screen of the game, with words describing the 'character' of each ghost. But why give them these unique traits in the first place? "Programming the four ghosts to chase after Pac-Man using the same algorithm would simply make them all follow the same path toward Pac-Man, thus making the game bland," says Iwatani. "So we gave them 'personalities' using an AI algorithm where the ghosts would spread and move differently, all the while putting the pressure on Pac-Man."

As a result, it's crucial that you understand the way that the ghosts behave if you're to have any hope of playing *Pac-Man* well. This was recognised very early on – when *Computer & Video Games* dedicated most of a page to *Pac-Man* tips in its debut issue, much of the focus was on the ghosts and the way they operate. At that time, players had cottoned on that some ghost behaviours changed based on their location relative to Pac-Man, and that "a vigorous shake of the lever can confuse the ghosts", but the mechanisms dictating these behaviours were not understood. The bottom of the maze was identified as a particularly dangerous area, but reasons for this were not provided.

Today, we have a full understanding of what makes Inky, Pinky, Blinky and Clyde tick, gained by looking at the inner workings of the program. The game begins with the ghosts in 'patrol' mode, but they soon switch to 'chase' mode. During this time, each ghost has its own target, based on different rules that mostly relate to Pac-Man's position and direction of travel. When a ghost reaches a junction, it makes a decision to turn based on which direction would give it the fastest straight-line route to its target.

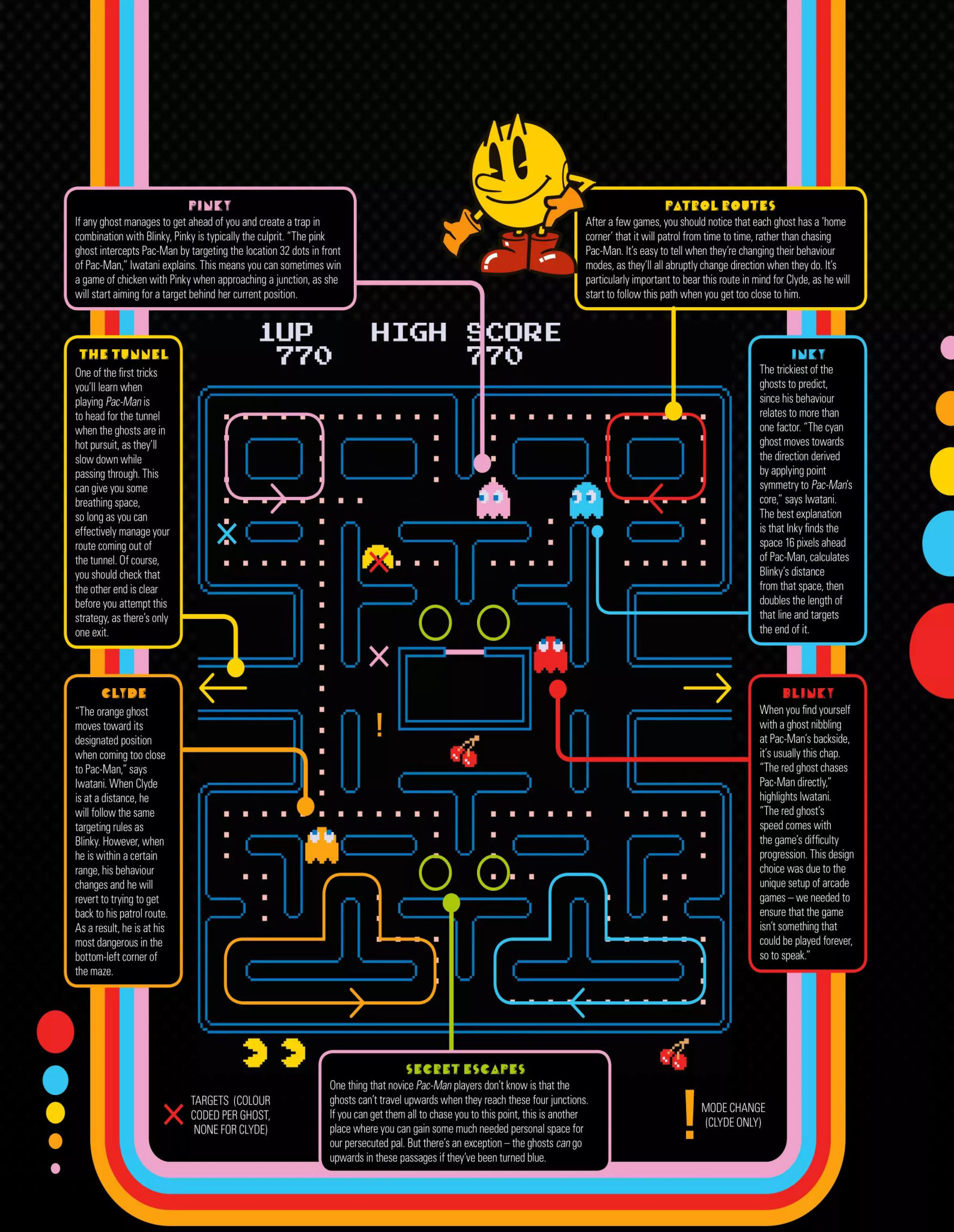
As well as allowing us to understand the ghosts, looking at the program also reveals the coding flaws and compromises that give them a little extra personality. For example, the simple straight-line calculation that ghosts use at junctions is one born of necessity, but one that means that the ghosts don't always choose the most efficient routes based on the actual layout of the maze. However, the more interesting one is that when Pac-Man is facing upwards, a bug means that Pinky and Inky set their targets to the left of where they should be – making their behaviour less predictable and much more dangerous. ▶



[Arcade] Part of what makes the ghosts so appealing is that you can turn the tables on them, at least temporarily.

"WE GAVE THEM 'PERSONALITIES' USING AN AI ALGORITHM WHERE THE GHOSTS WOULD SPREAD AND MOVE DIFFERENTLY, ALL THE WHILE PUTTING THE PRESSURE ON PAC-MAN"

TORU IWATANI


PINKY
If any ghost manages to get ahead of you and create a trap in combination with Blinky, Pinky is typically the culprit. "The pink ghost intercepts Pac-Man by targeting the location 32 dots in front of Pac-Man," Iwatani explains. This means you can sometimes win a game of chicken with Pinky when approaching a junction, as she will start aiming for a target behind her current position.
PATROL ROUTES
After a few games, you should notice that each ghost has a 'home corner' that it will patrol from time to time, rather than chasing Pac-Man. It's easy to tell when they're changing their behaviour modes, as they'll all abruptly change direction when they do. It's particularly important to bear this route in mind for Clyde, as he will start to follow this path when you get too close to him.
1UP 770
HIGH SCORE 770
THE TUNNEL
One of the first tricks you'll learn when playing *Pac-Man* is to head for the tunnel when the ghosts are in hot pursuit, as they'll slow down while passing through. This can give you some breathing space, so long as you can effectively manage your route coming out of the tunnel. Of course, you should check that the other end is clear before you attempt this strategy, as there's only one exit.
INKY
The trickiest of the ghosts to predict, since his behaviour relates to more than one factor. "The cyan ghost moves towards the direction derived by applying point symmetry to *Pac-Man*'s core," says Iwatani. The best explanation is that Inky finds the space 16 pixels ahead of Pac-Man, calculates Blinky's distance from that space, then doubles the length of that line and targets the end of it.
CLYDE
"The orange ghost moves toward its designated position when coming too close to Pac-Man," says Iwatani. When Clyde is at a distance, he will follow the same targeting rules as Blinky. However, when he is within a certain range, his behaviour changes and he will revert to trying to get back to his patrol route. As a result, he is at his most dangerous in the bottom-left corner of the maze.
BLINKY
When you find yourself with a ghost nibbling at Pac-Man's backside, it's usually this chap. "The red ghost chases Pac-Man directly," highlights Iwatani. "The red ghost's speed comes with the game's difficulty progression. This design choice was due to the unique setup of arcade games – we needed to ensure that the game isn't something that could be played forever, so to speak."
SECRET ESCAPES
One thing that novice *Pac-Man* players don't know is that the ghosts can't travel upwards when they reach these four junctions. If you can get them all to chase you to this point, this is another place where you can gain some much needed personal space for our persecuted pal. But there's an exception – the ghosts *can* go upwards in these passages if they've been turned blue.
TARGETS (COLOUR CODED PER GHOST, NONE FOR CLYDE)
MODE CHANGE (CLYDE ONLY)

DESIGNED TO PAC ARCADES

AS ONE OF THE FIRST IDENTIFIABLE PROTAGONISTS IN VIDEOGAMES, PAC-MAN'S DESIGN WAS OF PARAMOUNT IMPORTANCE TO THE SUCCESS OF THE ORIGINAL ARCADE GAME AND THE SERIES AT LARGE. TORU IWATANI ELABORATES ON SOME OF THE DECISIONS THAT GAVE US THE ICON WE KNOW TODAY

A ghost chases Pac-Man off the screen, only to be chased right back by a much larger Pac-Man. It's a simple intermission scene, offering a little bit of humour and personality based on the hero's ability to turn the tables on his foes, made to look quaint by the rapid progress of technology. But four decades on, it's easy to forget just how unusual it was for a videogame to have a star character at all. Many games of the Seventies put players in control of cars, tanks, spaceships and other vehicles, with the most recognisable characters of the decade being the Space Invaders – nameless enemies without any personality traits to speak of.

Why did Namco adopt this revolutionary approach to gaming presentation? According to *Pac-Man*'s designer Toru Iwatani, the answer lies in reaching across demographics. "The concept of creating a cartoonish hero came from the idea of making the game so that it appeals to females and couples," he explains. "We designed the characters, such as the enemy ghosts, so that they look cute, and incorporated a likeable character relationship similar to the characters in the cartoon *The Tom & Jerry Show*, and in that sense, I believe the cartoonish style made it very recognisable and liked by our gamers."

> "I IMAGINED PAC-MAN TO BE A CREATURE THAT EXISTS TO SIMPLY 'EAT' WITHOUT MUCH EMOTIONS AS WELL AS TO BE A NICE GUY TO EAT ALL THE EVILS HE SAW OUT IN HIS WORLD"
>
> **TORU IWATANI**

The story behind *Pac-Man*'s visual appearance is one that many people know, albeit in incomplete form. While it's true that *Pac-Man* was inspired by a pizza with a slice removed, that's not the whole story – in Susan Lammers' 1986 book *Programmers At Work*, Iwatani also explained that the circular shape was achieved by rounding off the Japanese kanji character for mouth, which is a simple square shape. But what of Pac-Man's personality? "I imagined Pac-Man to be a creature that exists to simply 'eat' without much emotions as well as to be a nice guy to eat all the evils he saw out in his world," says Iwatani. "I also didn't give him eyes, so that his emotions can't be seen." Of course, while this worked for the in-game sprite, the need for striking cabinet artwork led to more relatable, human features. "I didn't initially imagine having Pac-Man with arms and legs, but I wanted to make sure the arcade cabinet left a lasting impression, so from an industrial design standpoint, I think it worked well," Iwatani recalls.

According to Iwatani, the environment that *Pac-Man* inhabited was given just as much thought as the character himself. "I didn't want to make the game seem difficult and deter players away with its mazelike design, so it was crucial to ensure that the game was accessible to everyone. We did this by designing the maze in a way that it doesn't become the focus of attention, such as thinning the walls and making them neon blue so that the walls would blend with the black background. We also made sure that the rules and the controls were as simple as possible," he explains. "In addition, as mentioned earlier, I think the cartoon style [we] used helped in creating characters that appealed and resonated well with the player, so I would say that's a key aspect toward his design."

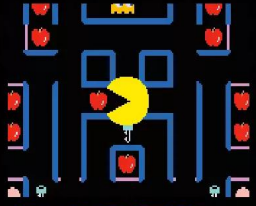
The decisions made in those early days have informed the character's later development. While his simple shape and love of eating have remained, the version of the character that appeared on the cabinet ultimately gave more room to grow – after all, running and jumping in *Pac-Land* would have been much harder without limbs. ▶

PAC-POWERS

SOME OF PAC-MAN'S MORE NOTABLE SKILLS AND ABILITIES FROM OVER THE YEARS

BIG EATER

Pac-Man's signature ability is his desire to gobble up everything in sight – and with the aid of a Power Pellet, he can even chomp down on enemies and send them packing temporarily.



GIANT GROWTH

Although Pac-Man first went big in one of the original game's cutscenes, *Super Pac-Man* was the first game featuring that ability, allowing Pac-Man greater speed and the ability to smash doors.

JUMPING

Platform spin-off *Pac-Land* gave our hero the simple ability to jump, but it transferred into the original maze game format by the end of the Eighties, thanks to the isometric outing *Pac-Mania*.

PYROMANCY

Pac-Man's ability to shoot fireballs first became apparent in *Pac-In-Time* – a reskinned *Fury Of The Furries*. He has since demonstrated his fire-throwing powers in the *Ghostly Adventures* series.

SWIMMING

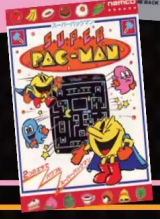
After struggling with water in *Pac-Land*, our hero learned to swim for *Pac-In-Time*, where he could also blow bubbles. Unlike his fiery abilities, swimming carried over to the *Pac-Man World* series.

THROWPAC FASHION

THE MAKEOVERS THAT HAVE HELPED PAC-MAN STAY FRESH OVER FOUR DECADES

1980–1989

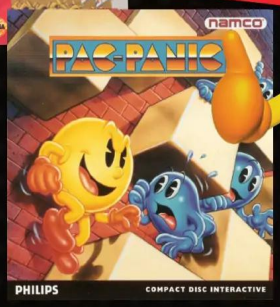
In his first appearance, Pac-Man's key traits are all established – his overall shape, colour scheme and demeanour form the basis of today's hero. Of course, Midway's American cabinet art took all of this and discarded it for a rather freaky-looking red-eyed, armless nightmare. After experimenting with fashion accessories – a cape in *Super Pac-Man*, a snazzy hat in *Pac-Land* – his fame went to his head somewhat, and he finally settled on a nose job in *Pac-Mania*.



» Pac-Man experimented with capes in *Super Pac-Man*, however we don't think this look is 'on fleek'.

» We hold a special place in our hearts for the *Pac-Mania* poster version of Pac-Man. It's simple, friendly and perfects that iconic look.

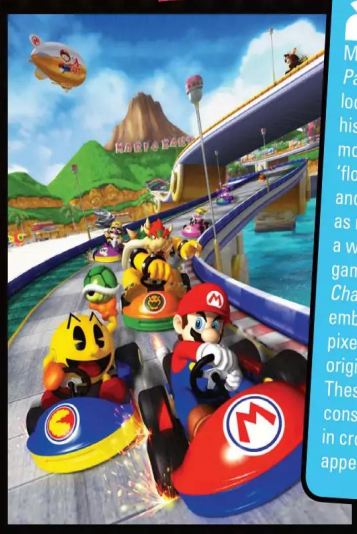
» Not even in the seven circles of Hell would you find a face as terrifying as the one featured on the box for *Pac-Man-2: The New Adventures*.



» *Pac-Panic* shows off a more sinister iteration of Pac-Man on its artwork, who is the real antagonist here? It doesn't look like the ghosts, that's for sure.

1990–1999

As Pac-Man matured, he started to experiment with a wider range of facial expressions. Unfortunately, it's pretty obvious that his somewhat sinister grin in *Pac-Panic* and his abject terror in *Pac-Man 2: The New Adventures* were not his best looks. He properly transitioned to the third dimension in the *Namco Museum* games, and began to inhabit a neat 3D version of his classic body just in time for his 20th anniversary in platformer *Pac-Man World*.



2000–2009

Moving into the new millennium, *Pac-Man* embraced a trio of official looks. As well as 2D and 3D versions of his classic limbed look, we began to see more of the *Pac-Mania* sprite's simplified 'floating orb' look in game artwork and merchandising. Additionally, as retro gaming became more of a widely appreciated activity, games like *Pac-Man Championship Edition* embraced the chunky pixels of Pac-Man's original sprite. These remained consistent, even in crossover appearances.

» *Pac-Man 256* embraced the original chunky sprite version of Pac-Man and supercharged it into the 21st century.

2010–2019

Looking for ways to refresh Pac-Man's image, most of the attention was placed on tinkering with his limbed look. *Pac-Man And The Ghostly Adventures* gave him additional details like shoelaces and eyelids, while mobile games such as *Pac-Man Pop* and *Pac-Man Party Royale* tended to make him more stylised, rather like an anime character or a Funko Pop! figure. Elsewhere, his classic looks remained intact in the likes of *Pac-Man Championship Edition 2*.

» The *Championship* version of Pac-Man is everything you'd want from modern Pac-Man, where the *Pac-Man Pop!* iteration haunts our nightmares.

REV ROLL

Borrowing a trick from another gaming star in *Pac-Man World*, the yellow fellow charges up on the spot before rolling off at high speed, enabling him to smash into enemies and climb steep hills.

BUTT BOUNCE

Given his entirely round body, can Pac-Man even be said to have a butt? Regardless, by leaping into the air and slamming down on his backside, Pac-Man can defeat enemies and activate switches.

PELLET PELT

In *Pac-Man World*, our pac-tastic protagonist can actually make use of the pellets he has collected by chucking them at enemies. You can also charge your shot for an added dose of explosive impact.

CRYOMANCY

The *Ghostly Adventures* games added ice powers to Pac-Man's arsenal, to complement his power over fire. As well as freezing enemies, this lets you freeze water to create temporary platforms.

TRANSFORMATIONS

By munching on a Power Berry in the *Ghostly Adventures* games, Pac-Man can transform into a robot, a chameleon and even a bouncy rubber ball in order to beat baddies and solve puzzles.

AHEAD OF THE PAC

HIGH SCORES AND COMPETITIVE PLAY ARE AT THE HEART OF THE ARCADE EXPERIENCE, AND PAC-MAN OFFERS ALL THE THRILLS YOU'D EXPECT IN THAT REGARD. WE SPEAK TO JON STOODLEY, ONE OF THE FEW PEOPLE TO HAVE EVER PLAYED A PERFECT GAME OF PAC-MAN, ABOUT THE GAME'S COMPETITIVE SCENE

As an arcade classic with a strong following today, *Pac-Man* has a competitive scene. Unlike many of them, it has a defined maximum score – 3,333,360 points. To achieve it, you have to get every bonus fruit and munch all four ghosts with every power pellet, on every single stage up to the level 256 kill screen, without losing a life. Few have ever achieved this monumental feat, but Jon Stoodley is one of them.

How did you first encounter *Pac-Man*, and what did you think of it?
Pac-Man arrived at the arcade in early 1981 but initially I had no interest in it. I was playing *Berzerk* and *Space Invaders* then, and it was my brother who got me into playing two-player games with him. He was a 100,000-point player, and within about a month, I passed his scores. A group of lads in the arcade were all competing for the highest score, and I then concentrated on *Pac-Man*.

» Jon's achievement earned him a place in Twin Galaxies founder Walter Day's trading card collection.

Why did you choose to master *Pac-Man*?
In the summer of 1982, my high score was over 280,000 and I witnessed an American guy play to over a million points with a big crowd watching. Las Vegas arcade in Liverpool was the premier place to meet up at the weekend for gamers, as they had all the latest releases. Watching someone easily beat my high score spurned me on to push myself as far as I could.

Were there any resources that helped you towards your goal of a perfect game?
Tim Balderramos of the US is one of the 'perfect club' and he shared some freehand grouping strategies with me live on a Twitch TV stream. I didn't have any intention to go for the perfect game, but my good friend and fellow Brit Tony Temple (*Missile Command* tournament world record holder) asked me if I thought I could reach perfection on *Pac-Man*. We'd been to the US several times and played live in Funspot during the tournament days, and we really enjoyed representing the UK there. The only gamers in the 'perfect club' were from North America, so the challenge was on.

How long did you have to practise to get to the point that you could achieve a perfect *Pac-Man* game?
I only played and practised on my original *Pac-Man* cab, and only live. Either at one of the events around the UK, live in the US, or live on Twitch TV. This wasn't to be elitist, I was, in fact, competing with myself from back in the day. It had to be done the same way as it was at the arcade. It took about two years in total to achieve the perfect game, which happened at the Play Expo event at the Winter Gardens in Margate, August 22 2015.

How did you feel when you finally achieved the maximum score?
Tired... that weekend, I played for 14 hours in total. On the Saturday, I had a perfect run break down at 2.2 million. When I finally realised that I'd achieved it, of course, I felt elated, but I guess the sacrifices and total commitment needed to achieve the perfect game sort of moulds you into a calm and totally concentrated gamer. Calm on the outside, keeping it cool inside.

In some games, competition over high scores can get quite fierce. How would you characterise the *Pac-Man* high score scene?
The *Pac-Man* scene has always been pretty competitive, but not like the shenanigans seen for the likes of *Donkey Kong*, thank heavens. I did have to pay my dues competitively in the US I guess, driven on by the intention to achieve perfection. Playing at an elite level always has its drawbacks I guess, for me personally, the dedication and commitment to be included in the perfect club had me laser-focused on just one thing. Because I was probably considered an 'outsider' playing abroad, the pressure to perform live was there for sure. Thing is though, I really had an

TIMELINE

THE KEY DEVELOPMENTS IN THE HISTORY OF PERFECT PAC-MAN PLAY

1 JULY 1999
Canada's Rick Fothergill sets a world record of 3,333,270 points, missing a perfect score by just 90 points.

3 JULY 1999
Notorious score-chaser Billy Mitchell hits 3,333,360 at the Funspot Arcade – the first recorded perfect game.

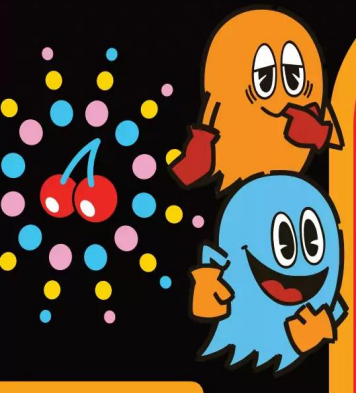
31 JULY 1999
Rick Fothergill submits his own perfect score to Twin Galaxies – the oldest standing score for the game.

16 FEB 2000
Then-holder of the *Ms Pac-Man* record Chris Ayra becomes the third person to achieve a perfect *Pac-Man* game.

4 DEC 2004
Tim Balderramos records his own perfect score, adding to his *Commando* and *Tunnel Runner* records.

21 JULY 2005
Donald Hayes also clocks a perfect score, taking a mammoth five hours, 24 minutes and 46 seconds to do so.

27 JUNE 2008
The first perfect score under 'Turbo' speed rules is submitted by Donald Hayes, marking another perfect run.



» Jon takes some time to give an interview during a more recent retro gaming event.

advantage as all my *Pac-Man* performances were live and in front of a crowd. I thrive on this and playing alone has never interested me.

Pac-Man has a known maximum score – what effect does that have on the game's competitive scene?

There's always going to be gamers attempting perfection on *Pac-Man*, it's an icon. The competitive scene for *Pac-Man* will always be there, but like it was in the arcades I guess. Gamers of all ages trying to beat that 'high score', playing two-player games like I did in the Eighties, and laughing and enjoying it on the way. Competitive *Pac-Man*, like attempting perfection etc, isn't a real reflection on the original game's magic. There's little fun with elite gaming, as it can be pretty solitary and insular. Only 100% focus, every game, every time. Nothing less.

Do you have any expert tips that a novice _Pac-Man_ player could practise to improve their own scores?

Remember that sometimes the ghosts aren't following you. They go straight to their respective corners when you press start, then reverse to pursue Pac-Man. It was with this knowledge, the early players utilised patterns to avoid the ghosts. Always try and 'pre-turn' before a corner or junction. That is to move the joystick in the direction you'd like to go a fraction before that turn. This way, there's no pausing, allowing the ghosts to gain ground on you. Always log your high scores and raise your personal bar. Try and relax your wrist. Pressing hard on the joystick doesn't give you extra speed! Most of all, enjoy the experience. Classic videogames were really a blank canvas with the basic features and rules laid out for you. Every classic game has many layers for the gamer to discover and evaluate for themselves. That's the beauty of these 40-year-old games, just use your imagination and get immersed. There's really nothing quite like retro gaming. ▶

PAC PEAKS

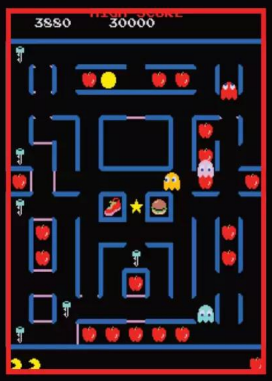
SOME PAC-MAN WORLD RECORDS THAT YOU MIGHT ACTUALLY BE ABLE TO BREAK

PAC-MAN

FORMAT
Atari 2600

SCORE
325,116 (Ken Anderson)

■ It's not the most authentic conversion, but this was a popular cartridge in its day. This score, set on an NTSC console using Game 1, Difficulty B settings, has stood since 1983.



SUPER PAC-MAN

FORMAT
Arcade

SCORE
12,111,640 (Robbie Lakeman)

■ While this record is relatively new, being set as recently as October 2015, topping it will be tough – the holder is a noted competitive gamer and former *Donkey Kong* champion.

MS PAC-MAN MAZE MADNESS

FORMAT
PlayStation

SCORE
24 seconds remaining (Matthew Felix)

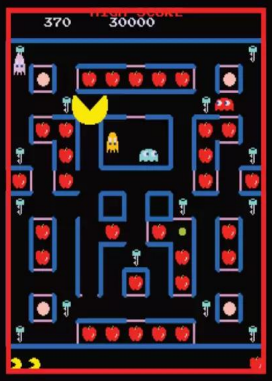
■ The maximum score on the 'Cleopactra' stage has already been achieved, but this time trial record is up for grabs, after Tom Duncan's original 2008 record was broken in 2018.

PAC-MAN CHAMPIONSHIP EDITION DX

FORMAT
PlayStation 3

SCORE
718,900 (Ethan Daniels)

■ This game was designed for competitive play, and the king of that in the Championship I Score Attack (five mins) category is Ethan Daniels, whose record has stood since 2015.



PAC-MAN 256

FORMAT
PlayStation 4

SCORE
155,875 (Marc Cohen)

■ This game is available on a variety of formats, but the version on Sony's console is the most contested. Marc set his record in October 2016, just days after the previous holder.

11 AUG 2009
David Race submits his first perfect run to Twin Galaxies. He does another under Turbo settings in December.

14 OCT 2009
Chris Ayra's fastest completion record is broken by Rick Fothergill, who finishes a perfect game in 3:35:43.

22 MAY 2013
David Race submits a new perfect game record, beating Rick Fothergill by almost seven minutes with 3:28:49.

15-17 NOV 2013
David Cruz completes a perfect game during the weekend of the Kong Off 3, while Twin Galaxies is offline.

13 DEC 2013
Jeff Pickles earns a perfect score using the Turbo speed rules, rather than the standard speed of most records.

2 SEP 2015
Jon Stoodley submits his perfect run from the Play Expo in Margate, which took place on 22 August 2015.

12 APRIL 2018
Twin Galaxies disqualifies Billy Mitchell from all games after an investigation into a *Donkey Kong* score.

5 JULY 2019
Billy Mitchell achieves another perfect game of *Pac-Man* at Funspot, streamed live on his Twitch channel.

PAC TO THE FUTURE

PAC-MAN'S HUGE SUCCESS IN THE WORLD'S ARCADES MEANT THAT SEQUELS WERE INEVITABLE. WHAT'S INTERESTING, HOWEVER, IS THAT WHILE SOME FELT RATHER OBVIOUS, NAMCO FOUND PLENTY OF WAYS TO ENSURE ITS YELLOW MASCOT COULD ADAPT TO WHATEVER NEW GENRES WERE THROWN AT HIM

One of the reasons why Pac-Man has become such an iconic character is because ultimately he's a very versatile one. While he spent his early years confined to mazes, he soon broke beyond those blue walls and tried a variety of different genres, including platformers, puzzle games and even kart racers.

Initially, changes in the early days of Pac-Man's career were subtle. *Ms Pac-Man* (originally a different game called *Crazy Otto*) added a partner for Pac-Man, four mazes, moving fruit and other enhancements, while *Pac-Man Plus* felt like something of a step back, adding little to Toru Iwatani's original game design. While *Super Pac-Man* introduced the collecting of keys which unlocked the doors to the fruit you had to clear on each stage and allowed Pac-Man to turn into Super Pac-Man, it was still fundamentally similar to earlier games.

Pac & Pal was another maze variant from Namco which introduced a helper character, while Bally Midway released all manner of games, including a quiz game (*Professor Pac-Man*) and a pinball hybrid called *Baby Pac-Man*. Namco was far from impressed with these unauthorised releases, however, and its partnership with Bally Midway soon dissolved.

1984's *Pac-Land* was the first big significant jump for Pac-Man as he sprouted arms and legs and turned his attention to the platform genre. It worked extremely well and still held elements of the core games, including the ghosts, fruit and Power Pill. The jumping skills Pac-Man picked up in *Pac-Land* led to them becoming a key mechanic to 1987's isometric maze hit *Pac-Mania*. Pac-Man's arcade career then went quiet with no significant release appearing until 1996's *Pac-Man VR*, which allowed up to four players to compete in a virtual environment.

» [iOS] *Pac-Man 256* began life on mobile devices but was soon ported to consoles and computers.

» [GameCube] *Pac-Man Fever* proved that having Pac-Man in your game wasn't an indication of quality.

» [Arcade] *Pac-Land* highlighted that Pac-Man could easily tackle different genres, while keeping its core credentials.

» [PlayStation] *Pac-Man World* was well-received and led to two further sequels.

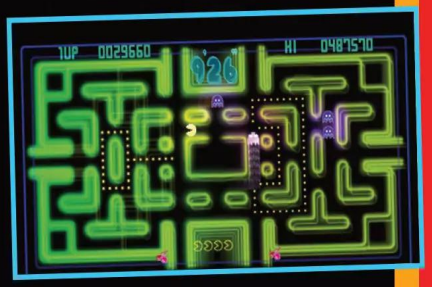
REINVENTING PAC-MAN

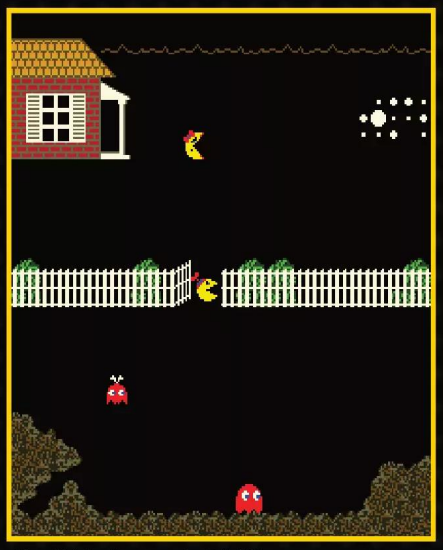
TADASHI IGUCHI ON CREATING THE PAC-MAN CHAMPIONSHIP EDITIONS

Tell us about the sub-series' origins...
We developed *Championship Edition* under the concept of creating a commemorative 25th anniversary game that would befit the Microsoft-sponsored *Pac-Man* World Championship tournament. This led to designing the game so that it would be quick and speedy (to allow game results to be determined in a short amount of time), while ensuring that player skills would directly affect the score, thus making it perfect for high-level players.

Was that tricky to achieve?
There were many processes that needed to be cleared before coming up with the game's design, but for this game we needed to ensure that the design allowed nonstop play so that it would be suitable for the tournament.

How did you come up with the evolving maze?
We didn't want the players and audience to constantly see our famous coffee break demo scene after each competition. Hence, we invented a system where the maze can be cleared by halves to ensure that the game wouldn't stop intermittently. This design, in turn, allowed us to evolve the maze in real time with the game progress.





» [Arcade] *Jr Pac-Man was* another Bally Midway game that wasn't authorised by Namco.

While Pac-Man would not return to arcades until 2011 he was still very much in the public's eye thanks to numerous conversions of his earlier arcade games during the Eighties and a number of spin-offs and new franchises that appeared on home systems in the Nineties. A selection of different compilations also kept gamers aware of Namco's yellow mascot during the Nineties and beyond. Games like 1993's *Pac-Attack* proved *Pac-Man* was perfectly at home in the puzzle genre, while 1994's *Pac-Man 2: The New Adventures* was an interesting point-and-click experiment. *Pac-Man World*, released in 1999, marked a significant evolution as it took place in 3D environments and gave Pac-Man the ability to bottom bounce on enemies and use a rev roll to activate platforms or move up ramps. It was popular enough to spawn two sequels.

2002's *Pac-Man Fever* was a *Mario Party* clone, with Pac-Man and his pals navigating board games and taking part in minigames, while 2003's *Pac-Man Vs* was a genius multiplayer game by Nintendo's Shigeru Miyamoto, designed to make use of the GameCube's compatibility with the Game Boy Advance. Equally impressive was the sheer ingenuity of *Pac-Pix* and *Pac 'N Roll*, both released in 2005 for Nintendo's DS. One allowed players to draw Pac-Man and guide him to eat ghosts by drawing walls and other items, while the other saw you navigate large areas by stroking Pac-Man with your stylus and prodding ghosts to repel them.

Perhaps the most significant sequel in *Pac-Man*'s colourful history was the excellent *Pac-Man Championship Edition* as it marked the last *Pac-Man* game that Iwatani designed. Released in 2007 for Xbox Live Arcade on Xbox 360, it featured the essence of *Pac-Man*, but was designed purely for competitive play and score chasing. Its popularity with gamers led to a sequel which appeared in 2016. Add in a return to arcades in 2011 with *Pac-Man Battle Royale* and countless mobile games like *Pac-Man 256* or appearances in games like *Super Smash Bros Ultimate*, and it's very easy to see why Pac-Man has remained a constant presence for the last 40 years – he's never really had the chance to go away. ▶

JOINING THE PAC

THE OLIVER TWINS ON CREATING PAC-MAN WORLD 3

How did you get to come to work on *Pac-Man World 3*

Philip Oliver: We [Blitz Games] were well-known for family-friendly, character-based games. One of those games was the very popular *Frogger 2: Swampy's Revenge* that I'm sure helped convince Namco we were a good fit for developing *Pac-Man World 3*.

What was it like making a 3D *Pac-Man* game?

Andrew Oliver: When working on and enhancing any brand, we looked at the core brand values. In the case of *Pac-Man*, that's about being chased through a world, eating dots and then finding a Power Pill that turns the tables on those classic ghosts. Beyond that, we could go wild and imaginative, dreaming up all kinds of settings, additional characters and special moves.

What guidance did Namco give you?

PO: Make it much better than *Pac-Man World 2*, get it out on PlayStation 2, Xbox, GameCube, PC and PSP in a fixed time for a fixed budget. We had to deliver a design overview, schedule and budget, and thankfully we won out against our rival bidders. It meant a lot of work, a tight deadline and minuscule margins, but still, it was an honour and privilege to create and carry on the legacy of *Pac-Man*.

Whose decision was it to have Pac-Man talk?

AO: We've always been massive fans of adding voices to all our characters, and Pac-Man was going to get the same treatment. We organised everything to do with this.

What elements of *Pac-Man World 3* are you most proud of?

PO: It captured the spirit of *Pac-Man*, but in a massive and imaginatively detailed world. We introduced a great number of new mechanics like the spin attacks, punching, electro-shocking, super stamps, wall jumps, fence climbing, pole swings, dot trails and the ribbon loop. Personally, I think the worlds were generally too large, but publishers always insisted 'big was better'.

Were you involved with the canned GBA release?

AO: Didn't know there was one. We didn't develop GBA games, so it wasn't awarded to us. I shouldn't pretend that our development didn't have major problems created by Namco. Our developers back at Blitz would hate me to paint a picture of bliss, because sadly it wasn't. We shipped a great game we're all proud of, but many would say it was despite Namco's interventions, and sadly we lost a lot of money making it.

THE BIG BIRTHDAY BASH

SUB-CHIEF PAC-MAN OFFICER EMEA, LEE KIRTON ON PAC-MAN'S 40TH

Why has Namco planned so many *Pac-Man* events?
Pac-Man is one of the most important characters in the history of videogames, has inspired many generations and has an awareness rate of over 97% worldwide. For many years we have celebrated *Pac-Man*'s birth dates and during their milestones we have created incredible games, social media activations and events.

How is Namco raising awareness of *Pac-Man*'s 40th birthday?
We have huge licensing awareness with great brands from Paco Rabanne to Quarter Arcades. We are also planning a European tour with something very special... The US have some incredible ideas as well which will be revealed soon.

Will any *Pac-Man* talks be taking place?
I have been doing a number of school and university tours where I present the history of our industry and *Pac-Man*'s history since 1980 until today... I talk about Pac-Man a lot in schools to inspire kids to come up with their own character creations, working in teams... I have seen hundreds of great game ideas that focus on the environment and positive things in the world.

Why does Pac-Man remain so universally popular?
It's the first ever videogame character. Pac-Man, as well as Inky, Blinky, Pinky and Clyde, are loved worldwide. The game is simple, yet addictive and other games like *Pac-Man Championship Edition* and *Pac-Man 256* help to keep awareness broad and everyone across the world, young and old, playing. Pac-Man has appeared in *Wreck-It Ralph* and many TV shows and movies and remains the most loved character out there. The key point is that kids know and like Pac-Man. Adults have a nostalgia attachment and the character design is so special. *Pac-Man Stories* is also on [Amazon] Alexa, and we designed this to be interactive storytelling for kids where they learn and make important decisions. The key for us is to continue to bring happiness to everyone with our wonderful character.

PAC OF ALL TRADES

NAMCO'S MASCOT IS ONE OF THOSE FEW GAMING ICONS THAT HAS MANAGED TO CROSS OVER FROM VIDEOGAMES AND ACHIEVE GLOBAL SUCCESS ACROSS A VARIETY OF DIFFERENT FORMATS. HERE WE EXAMINE HOW PAC-MAN WENT BEYOND BEING A VIDEOGAME PHENOMENON TO BECOME A GENUINE WORLDWIDE SUPERSTAR

If you ever needed further proof of *Pac-Man*'s success simply type '*Pac-Man* merchandise' into Google. You'll be inundated with memorabilia, both new and old, from *Pac-Man* costumes, to lamps and cuddly toys. *Pac-Man*'s appeal in the Eighties was readily apparent to Namco and the astute company soon lined up a bunch of merchandising opportunities. "I have a pretty extensive collection of vintage *Pac-Man* ephemera," admits Van Burnham, the author of *Supercade: A Visual History Of The Videogame Age*. "Lunchboxes, albums... the phone is pretty amazing. My favourite, though, are the *Pac-Man* 'Collector's Series' glasses sold at Arby's, circa 1982, which I've compulsively collected an extensive set of and use to drink the 18-Year Macallan I keep in the Supercade. Classy."

» Van Burnham is the author of *Supercade: A Visual History Of The Videogame Age*. A sequel, focusing on 1985-2001, will hit Kickstarter on June 1.

Van, like many gamers, first fell in love with the arcade game as a youngster and that love grew as surely and steadily as *Pac-Man*'s global reach did. "I was infected with '*Pac-Man* fever' when I was around ten years old," Van continues. "There was a corner store down the block from my house that had a *Pac-Man* machine... I memorised the patterns and got so good that I would win money playing against adults at bars with my parents. It was a different time [laughs]. I was absolutely in love with that game, the simplicity of it. It was pretty apparent even in the early Eighties

"THE FACT THAT THE CHARACTERS WERE SO ICONIC AND RECOGNISABLE MEANT THAT IT TRANSLATED WELL TO POP CULTURAL APPROPRIATION..."

VAN BURNHAM

SPREADING PAC-MAN FEVER

COWRITER JERRY BUCKNER TALKS US THROUGH HIS 1981 MUSIC HIT

Why did you create *Pac-Man Fever*?
We first saw a *Pac-Man* game in a restaurant in the fall of 1981 and got hooked like everyone else. We were doing a lot of commercial jingles at the time, and we thought it might help our business if we could get some local radio play. But after hearing it, the management company we were with decided to release it on their local record label. After the first play the request lines at the radio station exploded and it took off from there.

Did you play much *Pac-Man* on its release?
We played a lot, actually, before the release. Occasionally, we would make an appearance at an arcade and they would always want us to play *Pac-Man* against their best players and we rarely did very well. After the record came out we didn't play as much, but I still love the game.

Why do you think the song became so popular?
Everyone of all ages was playing the game and our song captured that excitement. The opening line, 'I gotta pocket full of quarters and I'm headed to the arcade,' summed it up and it hit a nerve worldwide.

Why do you think *Pac-Man* has become such a cultural icon?
It was a special time and *Pac-Man* represents that time to millions of people. It continues to appeal to all ages and genders, like Coca Cola and The Beatles. It came along at the perfect time and shows no signs of slowing down.

What led you to cowrite a book about *Pac-Man Fever*'s creation?
I was approached by a publisher last year. I get a lot of requests for interviews and people are always curious about how it all came about, so I thought it was a good idea. There were actually two other writers involved. I enjoyed the process and digging up all those memories. I think people will enjoy it. It's a quick read and has a lot of behind-the-scenes stories along with links to tons of music and pictures.

that it transcended just being a game, it was a cultural phenomenon."

If you need further proof of *Pac-Man*'s durability outside of the arcades you only need to look at how *Pac-Man* has permeated pop culture for the last four decades, although *Supercade*'s author feels good timing also helped Namco's mascot. "*Pac-Man* exploded in 1981, at the dawn of the 'Golden Age' of videogames, and as a result its success was inextricably linked to our memories of that era," Van tells us. "The fact that the characters were so iconic and recognisable meant that it translated well to pop cultural appropriation... the yellow sphere, the dots, the ghosts, the music... it was burned into the cultural consciousness so deeply that it immediately transports us to that moment in time."

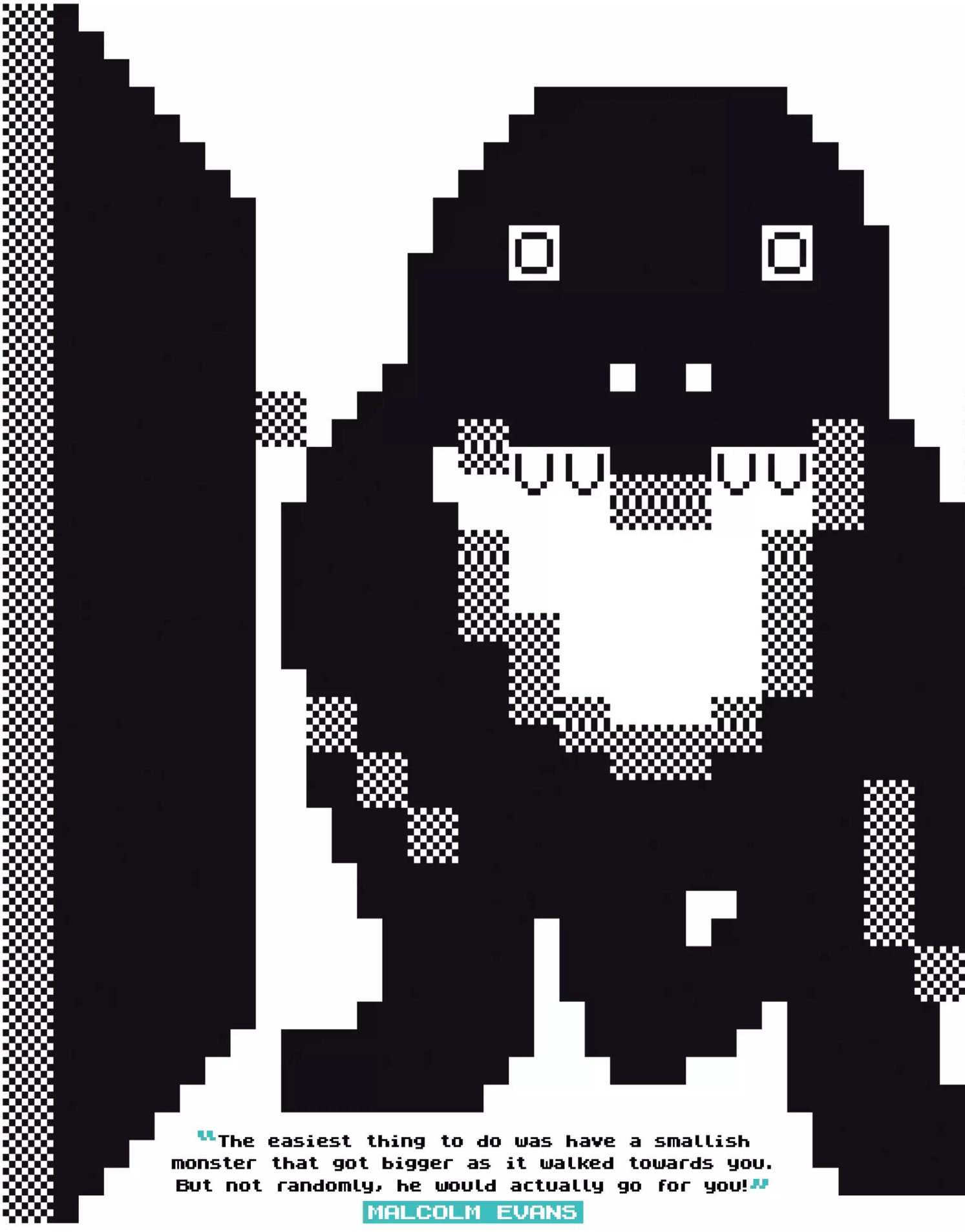
» Pac-Man plays a prominent role in this Adam Sandler movie. It grossed $244.9 million and features a cameo from Toru Iwatani as a repairman.

In addition to a wealth of merchandise that ranges from lunchboxes and cereal, to doormats and watches, *Pac-Man*'s cultural grip has also been cemented by a large number of film and TV appearances. Pac-Man himself has appeared seemingly endlessly on our screens, big and small, popping up multiple times in *Family Guy*, *The Simpsons* and *Robot Chicken*; stealing laughs from the audience when hero Peter Quill turns into him at the climax of *Guardians Of The Galaxy 2*, and taking the form of an alien invader in the 2015 Adam Sandler 'comedy' vehicle, *Pixels* to name just a few.

And then of course there was the *Pac-Man* TV series, which launched in 1982 and ran for two seasons. Developed by Jeffrey Scott and produced by the hit animation studio Hanna-Barbera Productions, it proved extremely popular on release and its influence could be seen in later *Pac-Man* games like *Pac-Land*, which was created in response to the cartoon's success. "I remember not being much of a fan when it first came out," remembers Van, "but I've since developed a sincere affection for it... not unlike the *Super Mario Bros* movie. I'm a purist and am still adjusting to 3D representations of classic 8-bit characters." While we're on the subject of 3D it's worth mentioning *Pac-Man And The Ghostly Adventures*, a CGI animated kids show, which began in 2013 and ran for three seasons and spawned two videogames.

The fact that Pac-Man can spawn a hit cartoon decades after he was first conceived is further proof of the character's global appeal. But then we'd expect nothing less from gaming's first true star. ✱

» In addition to glowing at different intensities, this officially licensed Pac-Man lamp also includes authentic sound effects.



"The easiest thing to do was have a smallish monster that got bigger as it walked towards you. But not randomly, he would actually go for you!"

MALCOLM EVANS

THE EVOLUTION OF 3D MONSTER MAZE

When Malcolm Evans got a ZX81 for his birthday he created a killer app for it – 3D Monster Maze, followed by four 3D sequels. Malcolm remembers how high anxiety and immersive gameplay defined his first-person perspective series

WORDS BY RORY MILNE

Programming is a young man's game. At least that was what thirty-something microprocessor scientist Malcolm Evans was advised when he looked into changing disciplines. Malcolm chose to ignore this guidance, however, and in 1981 – after unwrapping a birthday present from his wife – he took matters into his own hands, as the pioneering developer explains. "I was in the aerospace industry doing hardware, and I was keen to get into doing software, but it was difficult," Malcolm sighs. "So what happened was that my wife bought me a ZX81, and I thought: 'Now what the hell can I do with this?' So I wrote an algorithm that created a random maze. I did that in 2D, but then I wondered: 'What would it look like if you walked around it?'"

» After leaving the games industry, Malcolm Evans wrote software for spacecraft and a scientific satellite.

Malcolm's solution for rendering first-person perspective tours exploited the ZX81's ability to rapidly switch between full-screen graphics. He used these as frames of animation depicting 3D sections of his maze, which subsequently became home to a monster. "You could build up frames and then switch them, so I was doing that," Malcolm notes, "and then I was talking to a friend who said: 'Why don't you put something into the maze and make it a game?' So I thought: 'How do I get a monster in there, and how on Earth do I animate it?' I decided that the easiest thing to do was have a smallish monster that got bigger as it walked towards you. But not randomly, he would actually go for you!"

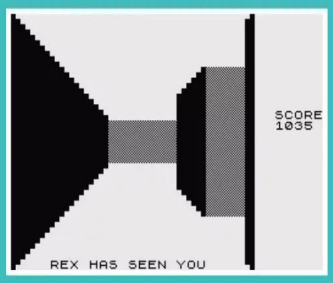
Having given Rex – his monster – homing instincts, Malcolm evened the odds with a chilling text-message system to warn players of the T-rex's proximity to them. "I didn't think about using visual indicators to show how close the dinosaur was," Malcolm reasons, "because ideally I wanted sounds in there, but the sound on the ZX81 was just clicks and bangs, so I thought about just telling you where Rex was. You wouldn't necessarily see him coming at you, but you always turned and ran! It was just to build up the anxiety, and you didn't necessarily have to see him to do that."

By way of rewarding players who held their nerve, Malcolm devised a scoring system with points being awarded for each step taken before becoming Rex's lunch. "I suppose the thing was that each maze was completely different – so where you started, and where the exit was," Malcolm ponders. "Obviously, some would have been easier than others, but each one was slightly more difficult, and I just wanted somehow to ▶

STAGES OF EVOLUTION:

THE GREAT ESCAPE

How fleeing mazes and tunnel runs led to chaotic corridors

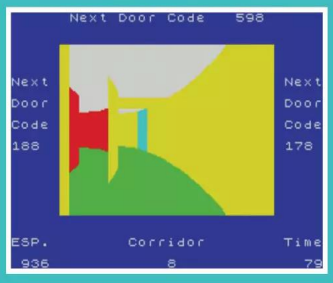


3D MONSTER MAZE

As terrifying as the velociraptors in the *Jurassic Park* kitchen sequence, *3D Monster Maze* drops you in a series of mazes with a hungry T-rex and challenges you to find their exits before you end up as a meal. Worse still, the mazes are randomly generated, so you can't even memorise any escape routes.

3D TUNNEL

The titular 3D Tunnel is long with endless twists and turns, but it does ultimately reach an end – where you can escape to freedom – rather than looping around to the beginning. The tunnel's creatures are benign, but colliding with its walls costs you a life, so avoiding them is a priority.



CORRIDORS OF GENON

Like *3D Monster Maze*, *Corridors Of Genon* has a maze that's home to hostile opposition that you have to escape. Its labyrinth is made of concentric circular corridors, each with doors that have security code entry systems that you use ESP to open, and Boguls, which drain your psychic powers.

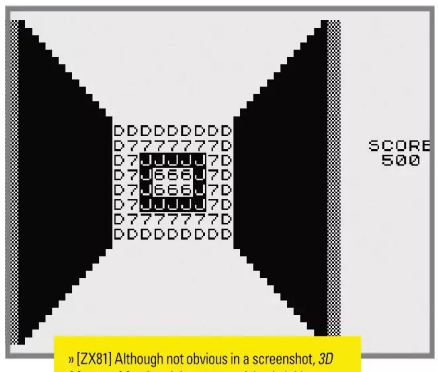
» [ZX81] A foreboding atmosphere is created from the moment you step into *3D Monster Maze*'s shadowy labyrinth.

» [ZX81] When *3D Monster Maze*'s dino sneaks up on you this is what you see when you turn around!

▶ give players a sense of achievement, even if they were killed off after 20 steps!"

Having given prospective players of his debut title suitable incentive, Malcolm named his labyrinthine horror game *3D Monster Maze*, and on its release it devoured the competition. "It was only after I produced it that I started looking at what else was available," Malcolm admits. "It was then that I discovered that: 'Oh. They're all in 2D!' So it was a surprise to me that *3D Monster Maze* sold. The other thing that happened was that as it started to take off I was made redundant. The company I was working for – Sperry Gyroscope in Bristol – closed down. So I ended up unemployed at just the right time."

Viewing redundancy as an opportunity, Malcolm convinced WHSmith to buy 10,000 copies of *3D Monster Maze* upfront, after which he devised a WWI follow-up. "My first thought was: 'Wouldn't it be great to do a First World War dogfight!'"

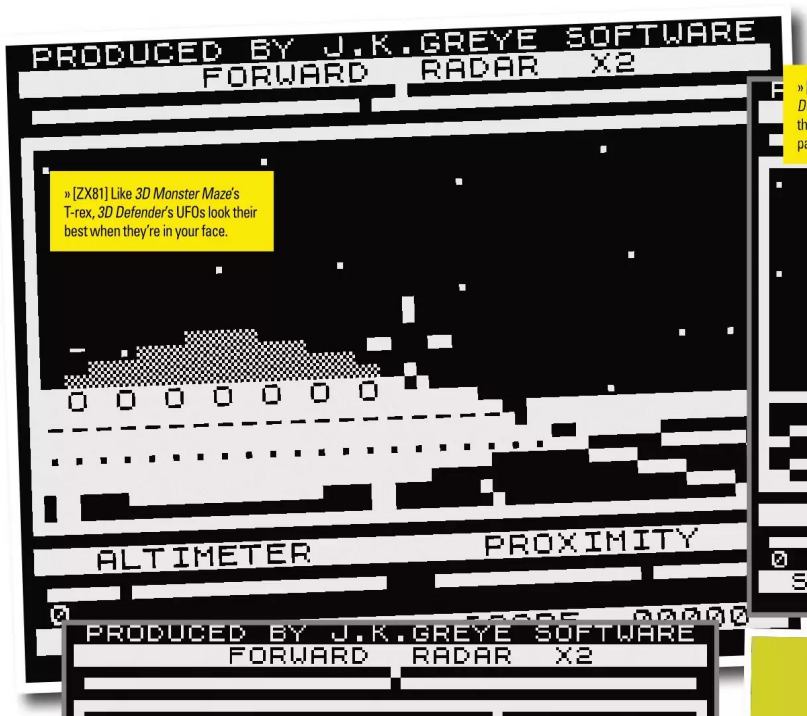


» [ZX81] Although not obvious in a screenshot, *3D Monster Maze*'s exit is a mesmerising kaleidoscope.

Malcolm enthuses. "But it would have ended up being quite slow, and you wouldn't recognise what the aircraft were until they were virtually on top of you, so you couldn't put biplanes in there! One thing I wish I had realised was that the ZX81 character set could have been changed, so increasing the apparent graphics resolution. Then zeppelins could have gracefully slid across the screen with detailed biplanes weaving around in protective roles."

But with his focus on low-res visuals, Malcolm reimagined his WWI dogfight as an invasion of saucer-shaped UFOs that could easily be identified from a distance. "The first thing I did was plot lines on the ground, so that you would get a feeling of height and speed," Malcolm recalls. "Then I simplified the biplanes down to UFOs, which were round, and therefore you recognised that they were UFOs. But then I realised that they were coming towards you and flying off the edge of the screen pretty quickly! It was then that I extended the size of the screen by putting radar on it, so that you could see that off to one side or the other there was a UFO coming."

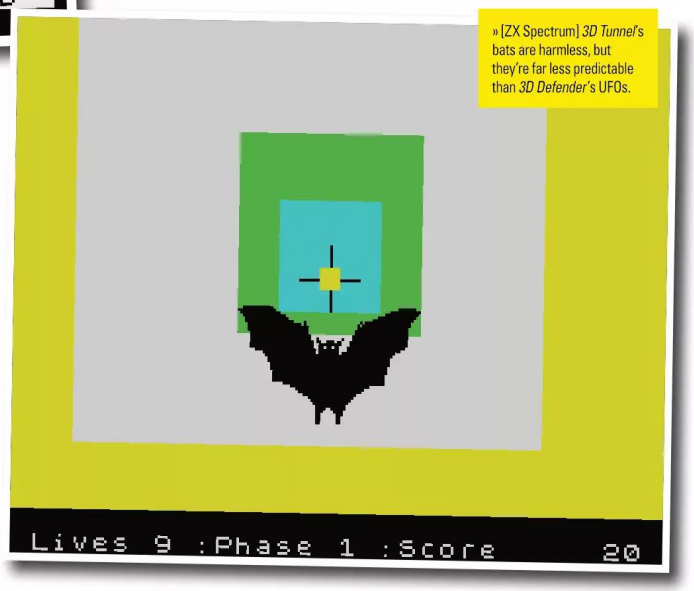
The radar in Malcolm's shooter was far from traditional, however, which the developer puts down to his game's narrative and its lack of screen



» [ZX81] Like *3D Monster Maze*'s T-rex, *3D Defender*'s UFOs look their best when they're in your face.

» [ZX81] Shooting down *3D Defender*'s UFOs is tricky, but there's an impressive visual pay-off for direct hits.

» [ZX81] The UFO plasma blasts in *3D Defender* expand slowly and can all but engulf the screen.



» [ZX Spectrum] *3D Tunnel*'s bats are harmless, but they're far less predictable than *3D Defender*'s UFOs.

space. "Well I was assuming that these UFOs would be attacking in the future, and not in the present day!" Malcolm laughs. "It was also the fact that the graphic for the radar couldn't be very big, and yet you still had to get all of the information from it that you needed. So I settled on the radar and proximity meters I had because they seemed to be sufficient."

As well as incorporating an atypical radar, Malcolm further increased the difficulty of his second game – now named *3D Defender* – by deducting points for each UFO that wasn't shot down. "While I was testing it, putting in some incentive to do something just came in automatically," Malcolm reflects. "I wanted to build up the anxiety all of the time, just like I did in *3D Monster Maze*. I was more interested in building up the anxiety than some other aspects, perhaps. So you couldn't just sit there in *3D Defender* and have a cup of tea!"

Like *3D Monster Maze* before it, *3D Defender* turned heads on its release, then just months later, Malcolm ordered a ZX Spectrum, and after developing a top-down Spectrum *Monster Maze* he rendered a first-person perspective tunnel on the system. "I thought I'd do something like *3D Monster Maze* for the walls, but this time keep them the same while changing the colours," Malcolm recollects. "By changing the colours, I could create the movement of the tunnel, and as it went up and down you had to avoid the sides. I thought you lost all perspective of sitting on a chair while you were looking at the screen; you were actually in it."

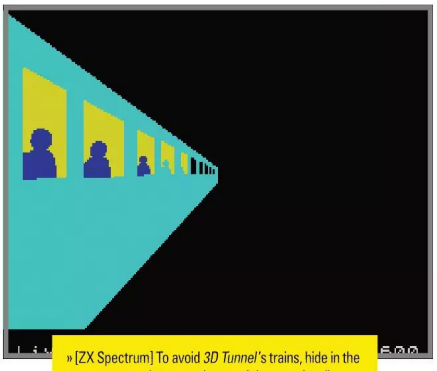
> **"By changing the colours, I could create the movement of the tunnel. I thought you lost all perspective of sitting on a chair"**
>
> **MALCOLM EVANS**

But as immersive as Malcolm's tunnel was, it lacked gameplay, and so the developer added his trademark fear factor by filling it with bats, spiders, toads and rats to shoot down – although he stopped short of adding a T-rex. "I thought of all of the things that you would find in a tunnel, and the fact that they all moved differently, so that you would have to sort out techniques to use with them," Malcolm considers. "There weren't any dinosaurs down there. Of course, what you do find at the end of a tunnel is an underground train coming towards you! I think there was just one safe position between it and the wall, and you would see all of the people in it zooming past."

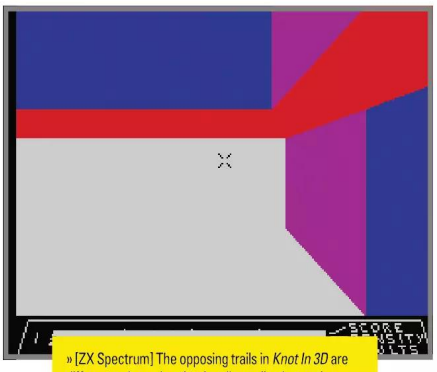
In addition to tapping into animal-based phobias, Malcolm also made collisions with the tunnel walls of his latest project deadly, just to further increase the anxiety of those playing it. "You had to really concentrate all of the time, and if you were concentrating on trying to shoot things then you would go into the wall," Malcolm observes. "So it would entice you to be thinking about two things at the same time, because suddenly the tunnel would zoom left or right, or up or down. It was just to raise the player's anxiety; I would always do that with my fast-moving games."

One final possibility for high anxiety was overlooked by Malcolm as he finalised his tunnel-set shooter, in that *3D Tunnel* – as it was now called – didn't have junctions, although he feels that he could have made them work. "I probably would have tried to get it so that you would see the tunnel dividing into two, and then you would go down one or the other," Malcolm ▶

» [ZX Spectrum] Dispatching *3D Tunnel*'s toads requires you to target the areas where they're going to leap.



» [ZX Spectrum] To avoid *3D Tunnel*'s trains, hide in the narrow spaces between them and the tunnel walls.



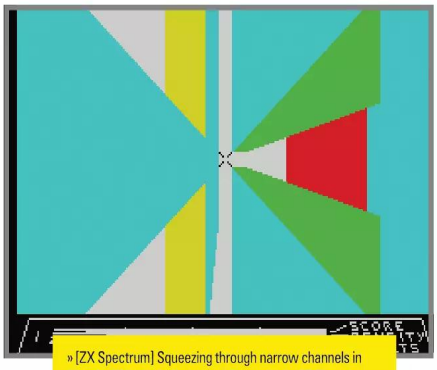
» [ZX Spectrum] The opposing trails in *Knot In 3D* are different colours, but they're all equally obstructive.

speculates. "But you wouldn't have known what was down each one, so then there could have been a sign coming towards you saying: 'Toads this way, bats that way!'"

Of course, *3D Tunnel* didn't need junctions, and its impressive visuals and breakneck speed ensured brisk sales when it came out, but rather than taking a well-earned break, Malcolm sought out inspiration for his next project. "I went around to a friend of mine who had *Snake* on the BBC, and I thought: 'I wonder what it would be like in 3D?'" Malcolm muses. "Then I realised I could do what I did in *3D Tunnel*, and just change the colours to do the whole thing. So you had various colours on each side of the trails, and each trail had three different colours, and as it was all done on colours I could move it as fast as I wanted."

But rather than locking his latest game's play area to the horizontal plane – like *3D Monster Maze*, Malcolm set its vibrant trails in a perpetual forward motion with options to veer left, right, up and down. "The map went to infinity in all directions," Malcolm says of his *Snake*-inspired title, "but if you went out one side you appeared at the other, and if you kept going you would run into yourself. You could watch as a trail was being created in front of you or to one side, and as things got more and more tight you could end up flying down a tunnel. If you could see a gap, and if you timed it right, you could zoom off, although the trails would often increase until you got stuck."

Given that Malcolm's first-person perspective *Snake* got harder as time went on, you might imagine that he would reward players in line with its increasing challenge, but he opted to turn this thinking on its head. "At the beginning, there was nothing in there, so it was a lot easier, and by the time things got tough you had a high score," Malcolm points out, "so I then made it more and more difficult to get points. Then with later



» [ZX Spectrum] Squeezing through narrow channels in *Knot In 3D* feels similar to avoiding trains in *3D Tunnel*.

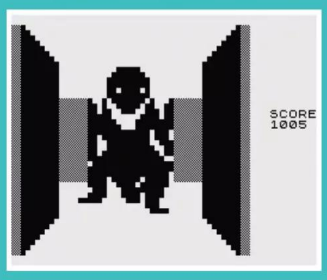
phases you started with more trails, and therefore everything built up far quicker, but you had to carry on getting points, and that would get more and more difficult every phase."

In light of the difficulty of Malcolm's *3D Snake* adaptation – named *Knot In 3D* – a radar like *3D Defender*'s could have been added to the game, although its designer feels that it wouldn't have helped. "The way I wanted *Knot In 3D* to go, I didn't think you would be able to take your eyes of it," Malcolm argues. "Even with a copilot saying: 'Go left!' or 'Go right!' you would have passed the point where you were supposed to turn before you had responded. Also, a radar would have been complicated, and so quite confusing to use."

Magazine reviewers loved *Knot In 3D* when they got their hands on it, but by this point Malcolm had moved on to adapting his ZX81 debut for the Spectrum as *Corridors Of Genon*, with small creatures called Boguls in place of Rex. "*Corridors Of Genon* was me trying to make a Spectrum *3D Monster Maze*," Malcolm acknowledges, "and the size of the Bogul was the biggest you could get. So what I had to do was have some way of them getting you, even though they might be

STAGES OF EVOLUTION:
SCARY MONSTERS

Tackling T-rexes, aliens, creepy crawlies and clones



3D MONSTER MAZE

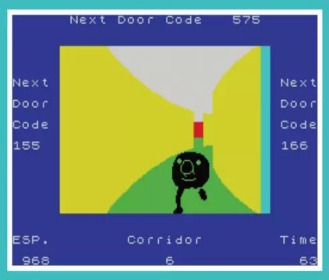
They don't come much scarier than the T-rex; Malcolm's monochrome monster is terrifying. Perhaps not in a still screenshot, but once you're immersed in *3D Monster Maze* and your anxiety is raised sky high by its sinister commentary, then the mere thought of him catching you fills you with fear.

3D DEFENDER

The bug-like UFO pilots that you don't shoot down in *3D Defender* speed past you and attack Earth, which is a scary thought when you consider that you're its last line of defence. By way of further increasing your anxiety, each failure to defend Earth results in you being stripped of points.

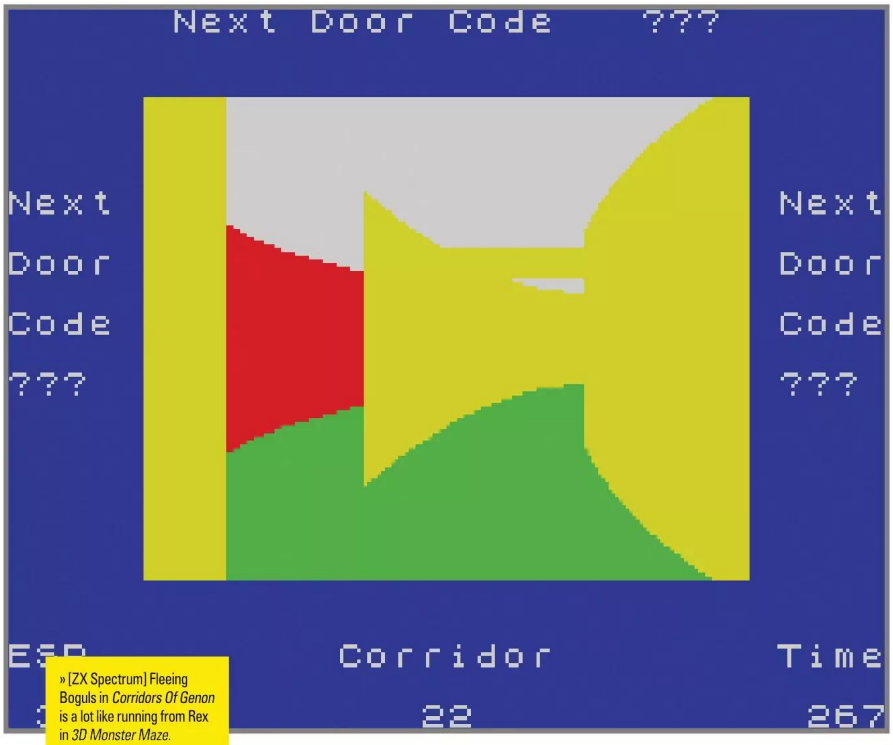
3D TUNNEL

If you've got an animal-based phobia then *3D Tunnel* probably isn't for you, as it likely features your greatest fear. It throws bats, spiders, toads and rats in your direction, each of which gets uncomfortably close to the screen. On the plus side, you're rewarded for blasting them to bits.



CORRIDORS OF GENON

They may not be monsters like Rex, but *Corridors Of Genon*'s Boguls are deeply unnerving. At first glance they look cute, but let's face it, a creature that gives you brain damage by snorting gunge in your face is anything but, so it's no wonder that panic sets in when they're on your trail.



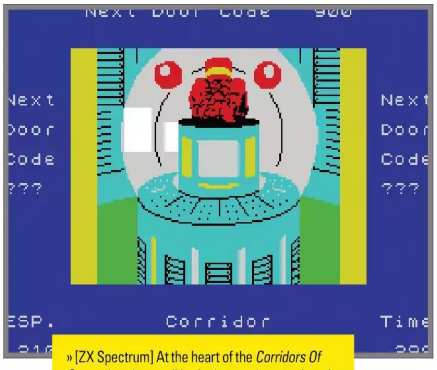
» [ZX Spectrum] Fleeing Boguls in *Corridors Of Genon* is a lot like running from Rex in *3D Monster Maze*.

small. So that's why I thought of the player character getting 'gunged' – or 'Boguled!' The Boguls looked cute because they had a long trumpet-nose, but that's where the gunge came out of. That's all they could do – snort gunge all over you!"

> **"The Boguls looked cute because they had a long trumpet-nose, that's where the gunge came out. That's all they could do – snort gunge all over you!"**
>
> **MALCOLM EVANS**

C*orridors Of Genon* also differed from *3D Monster Maze* in that its maze incorporated security code-protected doors instead of open doorways, which your ESP could open, providing attacks by Boguls didn't deplete your sixth sense. "Each door was like the board game *Mastermind*," Malcolm explains, "and you had the sound of the Bogul coming at you, so you knew if he was at the other side of the door. If you didn't enter the code in a certain time you had to run off somewhere, and you also had the possibility that the Bogul could be in your corridor, so you had to keep worrying about that as well."

By retaining *3D Monster Maze*'s key mechanic of being stalked by an unseen predator, *Corridors Of Genon* replicated its inspiration's edgy atmosphere, although unlike its predecessor it stopped short of rewarding each step taken before death. "I think I probably thought that the anxiety was there already," Malcolm contemplates, "and you would only be able to look at a score when you stopped, because if you took your eye off the game then anything could happen in that time. Also, your best time was something to beat instead of a score."



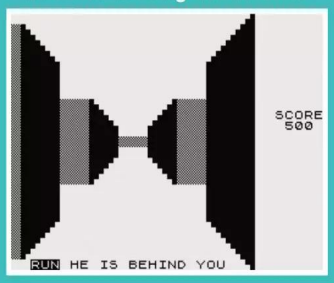
» [ZX Spectrum] At the heart of the *Corridors Of Genon* there's an evil brain that you have to decode.

But in keeping with Malcolm's T-rex-themed debut, *Corridors Of Genon* had a twist; once you escaped its corridors the Boguls respawned and you were sent back in. "I don't know if I was maybe doing something like in *3D Monster Maze*, where if you got killed you got a one in two chance of coming out of that," Malcolm wonders. "If so, the end of *Corridors Of Genon* might have been me having another laugh at the player's expense!"

Although his next project – *Trashman* – delivered more laughs, *Corridors Of Genon* was Malcolm's final first-person perspective game. Decades later, Malcolm is pleased that his 3D games are still popular and appreciated. "Everything after *Corridors Of Genon* was up against the limits of the Spectrum – that's why I changed perspectives," Malcolm says. "I could still make the games 3D-ish, but they weren't in first-person perspective, I think in my mind I'd exhausted the 3D capability of the Spectrum. So I'm just astounded that people still enjoy playing my 3D games, but I'm proud of that."

STAGES OF EVOLUTION: IMPOSSIBLE ODDS

From endless mazes and countless invaders to being tied in knots

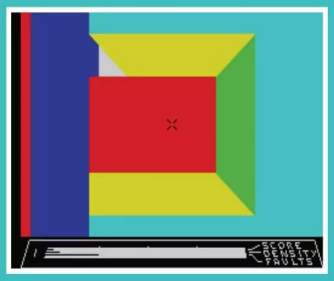


3D MONSTER MAZE

Technically, *3D Monster Maze* isn't impossible; you can appeal if Rex catches you, which gives you 50/50 odds of being eaten or being freed, which is represented by the game resetting. This risky option aside, *3D Monster Maze* is an endless series of mazes for the tireless T-rex to hunt you in.

3D DEFENDER

You're on a one-way mission in *3D Defender*. Your opposition is an entire fleet of UFOs, and the more you dispatch the more attack, first in pairs and ultimately in groups of four. Your radar and proximity meter give you a fighting chance, but once your shields fail, you're blown to oblivion.



KNOT IN 3D

Whether *Knot In 3D* comes to an end or not is an unanswered question. What's for sure is that its stiff challenge makes it next to impossible to find out. Typically, you rack up way too many faults before netting nearly enough points to see if the game ends after its hardest phase is beaten.

MARIO
PLATFORM SUPERSTAR

MARIO IS ONE OF THE MOST CONSISTENT STARS IN GAMING, APPEARING IN 2D PLATFORMERS THAT HAVE ATTRACTED CRITICAL PRAISE AND MASSIVE SALES FOR OVER THREE DECADES. WITH THE AID OF A PANEL OF EXPERT COMMENTATORS, WE REVEAL WHAT MAKES THEM SO FANTASTIC

WORDS BY NICK THORPE

When you look at the 2D platform genre, one series stands alone as the king of the craft – *Mario*. We're sure that some people want to argue with that, but when push comes to shove and the public has its say, it tells us that the 2D *Mario* games are brilliant. You lot voted *Super Mario Bros 3* as the best NES game ever, and declared *Super Mario World* to be the greatest game of all time. The sales of the games are frequently measured in the tens of millions rather than mere millions, and it's worth considering that for all the critical love directed towards the 3D entries in the series, their commercial performance pales in comparison – *New Super Mario Bros Wii* outsold both *Super Mario Galaxy* games *combined*. But what makes the games so great?

To really tackle that question, we need to look back to the very first game – one that is remarkably poorly documented, given its importance. Historians can't even agree on its North American release date, and because of the diminished importance of the console scene in the west during the mid-Eighties, there are very few contemporary reviews. Thankfully, the experts of the time can remember the impact that it made on them. One of those experts was Julian 'Jaz' Rignall, who was offered the chance to play an American NES console in early 1986, during a visit to Activision. "Needless to say, I jumped at the chance," he recalls. "I played *Excitebike* first, which was really enjoyable, but then I plugged in *Super Mario Bros* and was absolutely blown away."

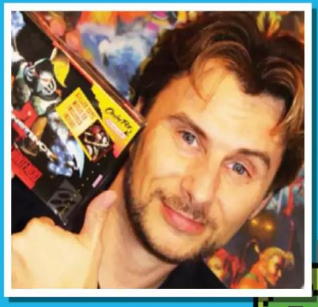
Why did the game make such an impression? "The smoothness of the fullscreen scrolling was deeply impressive, and the graphics, music, feel of the controls, and the overall gameplay were all incredibly well polished, designed, and presented," Julian highlights. "It made most of the Commodore 64 games I was playing at the time feel old-fashioned and rather clunky. Comparatively, *Super Mario Bros* looked and felt like a full-on arcade machine. I immediately fell in love with the game, and couldn't stop thinking about it as I travelled back home to Ludlow on the train. I absolutely *had* to get a Nintendo Entertainment System, and the moment it was officially released in the UK a year or so later, I rushed out and bought one."

The design of the game was a huge step up compared to the game's predecessor, *Mario Bros*. That game had offered single-screen action with fixed level designs. By comparison, *Super Mario Bros* had scrolling stages many times the length of the screen, taking in outdoor stages, underground courses, underwater sections and deadly castles. Each part had unique graphics and musical themes, interesting objects including springboards and lifts, and there were plenty of secret areas accessed by travelling through pipes. In the case of the underwater stages, the game's mechanics changed massively as the jump button was reassigned to the task of making Mario swim, greatly altering the feel of the game. *Super Mario Bros* also featured an even greater variety of enemies with distinct and challenging behaviour, as well as boss battles. All of this was achieved in just 32KB of ROM, which was a remarkable feat.

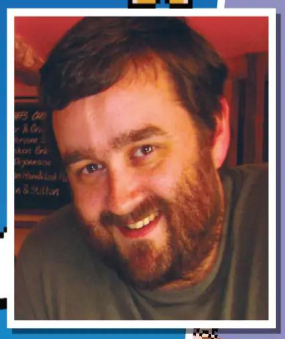
Like the previous game, players were encouraged to jump into platforms from below – but instead of merely bumping the platforms to tackle enemies, players could break blocks, which was a massively important level design tool. John Romero, whose admiration for the *Mario* games fed into the design of the *Commander Keen* platformers, explains why

» Julian Rignall saw the *Super Mario Bros* series grow while writing for *CVG* and *Mean Machines*.

» John Romero saw success with the *Commander Keen* platformers before id hit big with *Doom*.



» Kevin Bayliss' graphics helped bring platformers from Rare and Playtonic to life, including *Donkey Kong Country*.



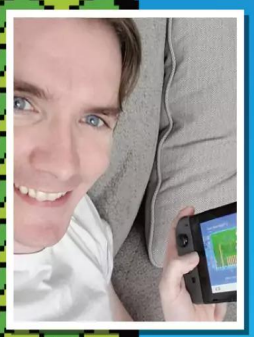
» Ste Pickford's (right) long career includes the fondly remembered SNES game *Plok*.

» Chris Sutherland (left) has designed great platformers at both Rare and Playtonic.

» [NES] Punishing difficulty and feel-bad items like the Poison Mushroom caused Nintendo Of America to avoid the original *Super Mario Bros 2*.

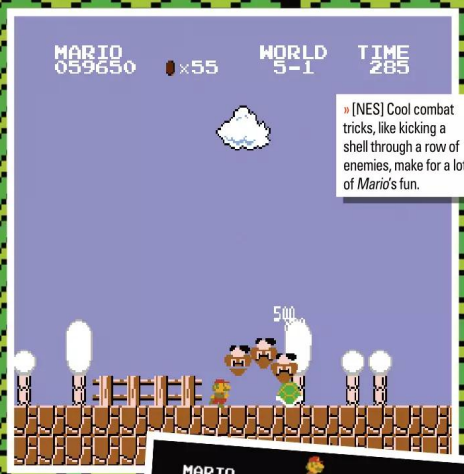
» [NES] Swimming sections add variety, though they're tough as Mario is more vulnerable and harder to control.

» Sten is a prolific *Mario* speedrunner, with a particular fondness for *Super Mario World*.

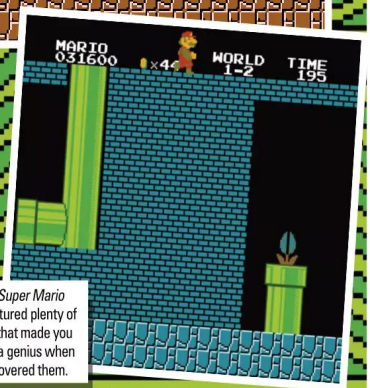


» Ross O'Donovan's (left) *Super Mario Maker* courses torment popular YouTubers the Game Grumps.

» Derek Yu (right) is an indie developer best known for his breakout platform game *Spelunky*.



» [NES] Cool combat tricks, like kicking a shell through a row of enemies, make for a lot of *Mario*'s fun.



» [NES] *Super Mario Bros* featured plenty of secrets that made you feel like a genius when you discovered them.

these are so useful. "Allowing blocks to break, design-wise, could be used to clear a space for a difficult jump. Hiding secret areas with destructible blocks is also a great use, such as breaking a block at the top of the screen to allow Mario to jump up and on top of the level," he explains. However, blocks had a secondary purpose that John finds even cleverer. "Hiding items in a broken block was genius – the block didn't just disappear, it gave you a reward. The idea of also changing the state of a block was smart as well – you keep hitting your head on a block as it pops out coins until it becomes solid and is done giving rewards."

Those rewards are a key part of the *Mario* design. Coins do nothing on their own but grant an extra life when 100 are collected, and are frequently imitated by other platform games – for example, with *Bubsy*'s yarn balls or *Rayman*'s Tings. More immediately rewarding were the power-ups, which could protect Mario from enemies and expand his combat ability. Added to the returning ability to knock enemies off higher platforms, this provided two familiar ways to handle threats. "One of the tricky things with power-ups is that they can be used to bypass many carefully-set-up game design puzzles, which if they can be activated anywhere makes life very challenging for the designer," notes Chris Sutherland, whose career highlights include platform games like *Donkey Kong Country* and *Yooka-Laylee And The Impossible Lair*. "That's why *Mario* games have the power-ups placed very carefully, with the expectation the player will choose to use them; but what's great is that it's rarely a requirement, so if you miss it, you're not blocked," he continues. "In fact, when you encounter a specific power-up, that's often a clue that this is to help you with an imminent challenge. For example, if you uncover a Star power-up, you're sure to find some tougher enemy configurations to run through in the coming screens ahead."

Interestingly, combat is an aspect of *Super Mario Bros*' design that is frequently overlooked. "I think we sometimes forget how weird jumping on enemies to kill them was when *Mario* games first appeared. It was unique. In almost every comparable game touching an enemy would kill you," says Ste Pickford, who worked on the fondly remembered SNES platformer *Plok*. In fact, Nintendo's developers had felt it strange that jumping on Koopas would harm Mario in the original *Mario Bros*, as the reasonable expectation would be that the turtle would come off worse – and it was that very point that led to the use of jumping attacks. "The idea of touching an enemy in a certain way (from above) changing the rules, and instead killing the enemy, was quite a subtle, clever and sophisticated game system at the time. *Joust* is the only other game I can think of that did anything similar. I remember being blown away by it at the time. Both amazed at the idea, and surprised that they went to the trouble to program a relatively sophisticated system like that," Ste recalls, before explaining the broader implications that jump attacks had for the genre as a whole. "The idea has been reused by other, later games, and is now occasionally used as a 'standard' platform game system,

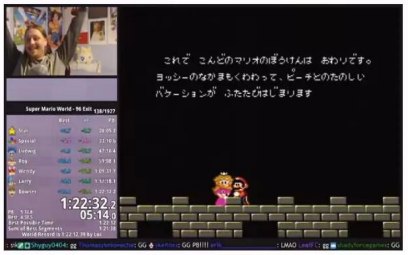
SUPER SPEED BROS

STEN EXPLAINS WHY SUPER MARIO WORLD REMAINS AN ENDURING FAVOURITE IN THE SPEEDRUNNING COMMUNITY

Sten is a formidable speedrunner, with a variety of quick completions of the classic games – he can beat the original *Super Mario Bros* in under five minutes and can get through *Super Mario Bros 3* in less than three and a half minutes. But his most prolific exploits have been with *Super Mario World*, where he registers strong performances across a number of categories, including doing the full 96 exits in one hour, 22 minutes and 36 seconds – a time that puts him amongst the elite.

Thanks to his familiarity with the game, Sten has noticed the ways in which the game design supports speedrunning. "Most of the 2D *Mario* games tend to give you enough room to get up to full speed quite easily near the start of most levels, then it can be a matter of precision platforming and tight jumps, but you can usually maintain full speed through most of the stage," Sten explains. However, *Super Mario World* is not entirely speedrun-friendly. "The worst type of stages for speedruns are autoscrollers, or some on-rails levels (such as ones with moving rafts that you can't avoid riding), purely because you're stuck moving at the game's pace. Some of the on-rails levels can be 'cheesed'," he tells us. "In fact Cheese Bridge Area in *Super Mario World* is intended to be an on-rails level, however if you enter with cape and yoshi you can just run, hold right, and hold jump at the right point and you'll get straight to the end of the level."

Part of what makes *Super Mario World* interesting to run is the metagame that comes from the use of the world map in certain categories. "For a lot of categories there will just be one optimal route through the game, and that'll be the one you take. However for categories such as 96 exit – which beats every exit of the game plus Bowser – there are multiple routes through the overworld that neither save nor lose time. This allows runners to choose a route based on what levels or backups that they'd like to have earlier in the run," explains Sten. "For example, one 96 exit route gets the green switch early, which gives access to more backup capes earlier on, but it also puts Donut Plains 2 – a long autoscroller that you have to play twice – earlier in the run, meaning that if you reset after this point you have to spend another few minutes sitting around in an autoscroller. Other routes put more difficult stages earlier in the run, and some levels can be more consistent early in the run."



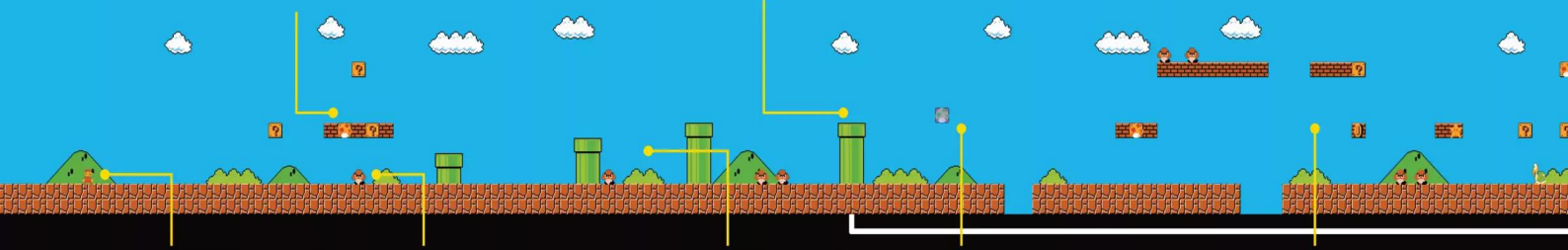
Like a growing number of skilled retro game competitors, Sten is younger than *Super Mario World* itself. Why do players keep flocking to this game? "*Super Mario World*'s a reasonably easy game to pick up as a speedrun, and it's a very well-known game, so just the sheer number of people running it leads to more people becoming good at it and competing at a high level," he says. But unlike the likes of *Donkey Kong*, which has retained a stable top level over many years, *Super Mario World*'s best and brightest are constantly changing according to Sten. "Even if older runners stop playing, new ones will tend to move in to take their place. I started running *Super Mario World* a bit over four years ago, and about half the top ten in most major categories picked up the game more recently than that."

THE BASICS OF BRILLIANCE

FOR MANY, WORLD 1-1 IS THE PINNACLE OF INTRODUCTIONS

The question mark blocks entice players into interaction. "The first question block that contains a mushroom is on a short platform so the player can understand how the mushroom slides to the right once revealed," notes Chris. "Also a pipe is placed to the right, so the mushroom rebounds towards the player making it very hard to miss this first important power-up."

The one lesson 1-1 doesn't teach you is using pipes. "One thing I love is that right at the start of 1-2 you see Mario entering a pipe to go underground, rather than just being placed directly underground," says Sten. "This teaches the player how pipes work and makes sure they're familiar with them for the pipe at the end of the stage." When you later return to 1-1, you'll experiment here.



The very first screen of *Super Mario Bros* presents you with Mario and very little else, encouraging you to experiment. "If it were designed these days, there would be lots of little waypoints and glowing blobs to follow, maybe one or two pop-up tooltip-type messages telling you to jump on things," says Julian "But it's got none of that, and doesn't need to."

Your first encounter with an enemy is with the simplest of the lot – yet even this is important. "I recall when I was five and playing it for the first time, I just kept running into the first Goomba over and over," says Ross. "It truly was the perfect way to teach someone new to videogames that one of the buttons on the controller might be able to help you with this simple obstacle."

Although the player should be familiar with jumping by the time they reach the series of pipes, Chris notes that they have an important function. "Pipes of increasing heights are placed as obstacles – this helps the player understand that Mario has a variable height jump determined by the duration of the button press."

Something that many first-time players might miss is this extra life mushroom. "The fact that invisible blocks are hidden in the air encourages a ton of random jumping to see if any are around," says John. The automatic movement of the mushroom and its proximity to a bottomless pit also teaches the player a lesson – sometimes, they need to act fast to get the best items.

As the level goes on, blocks are placed higher. "The first thing it encourages is jumping and getting better at it, then aiming at blocks to hit with your head," says John. "Putting blocks up high shows the player they should jump to get higher. Power-ups are immediately available, and that lesson is taught on the second screen. Multiple types of power-ups, too." The star and Fire Flower are often encountered here.

» [NES] The earliest concept for *Super Mario Bros 2* was a vertical co-op platformer, with players throwing each other up-screen.

by people writing new retro-styled games, but it always annoys me when it's used in other games as it feels like a unique feature of *Mario*, and one that you shouldn't rip off."

For dedicated players, *Super Mario Bros* included plenty in the way of secrets. As well as the areas hidden at the other end of the game's numerous pipes, hidden blocks could grow vines leading to new areas in the sky, and particularly well-hidden Warp Zones allowed players to skip many stages. "In *Mario*, I always loved how you could go beyond the top of the screen because it felt like you weren't supposed to be there – in my opinion, the best secrets never feel like they were designed (and some of them, like Minus World, aren't!)," says Derek Yu, creator of the indie hit *Spelunky*. Such secrets have informed his own philosophy on game design. "To me, it's almost unimportant whether a secret will be discovered so long as it feels like a natural part of the game world. In this day and age, it's hard to bury a secret so deep that no one will discover it. Instead, I focus on making sure secrets are connected to the rest of the game in meaningful ways. "

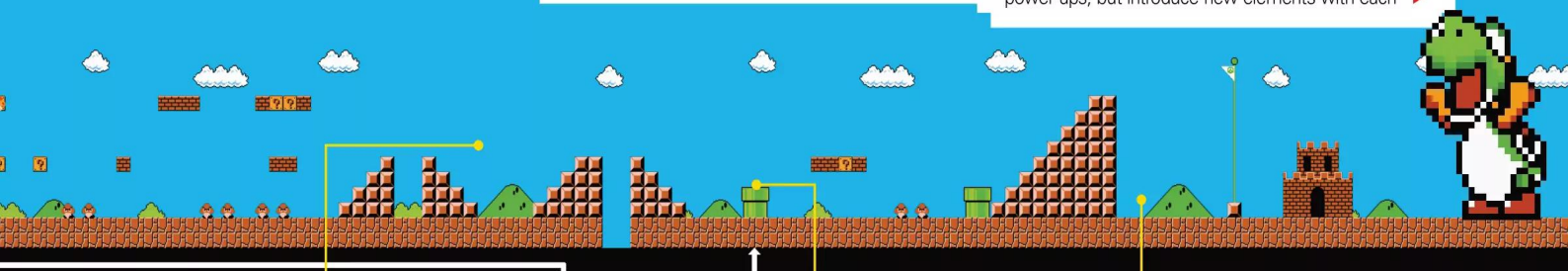
Nintendo even managed to work a little extra fun into the act of completing a stage, by challenging players to earn extra points by reaching the top of the flagpole that signified the finish line. "A great game design principle is to try to make everything into its own little game, and that's something that *Mario* games have always been good at, so you have games nested within games, minigames within the macro-game, and micro-games embedded into every subset of the game itself," says Ste. "Having an extra little game when you complete the level is a perfect example of this." Indeed, this principle was carried forward with the random power-up box in *Super Mario Bros 3* and the moving bar in *Super Mario World*.

While most of *Mario*'s excellence can be traced back to the first game, the series famously evolved in divergent directions with its second game. The Japanese *Super Mario Bros 2* offers very little notable evolution over the original game, instead feeling more like an ultra-tough expansion pack. For the international market, Nintendo localised the unrelated *Yume Kojo: Doki Doki Panic*, which had incorporated some *Mario*-style elements, but felt rather different thanks to its core concept of lifting objects and throwing them. "*Super Mario Bros 2* was a misstep for the series, and lost the essence of *Mario*, in my opinion," says Ste, and it's hard to disagree with him too strongly. Although the game has many fans and is an accomplished platform game in its own right, the series returned to its core combat concept of jumping on enemies, and although Mario has since had the ability to carry objects it has rarely been enormously important. The game's most important contribution to the series was arguably the introduction of themed worlds, each featuring distinct hazards.

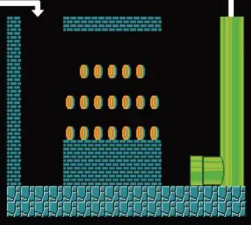
***Super Mario Bros 3* brought the series back to a single worldwide standard, and had a much bigger influence on the series as a whole.** John Romero was part of the id Software team that pitched a PC conversion of *Super Mario Bros 3* to Nintendo, so we had to ask what made the game stand out to him at the time. "The amazing control and the huge amount of variety in the eight worlds. It even *felt* like it was going to be the last *Mario* for the NES – they pulled out all the stops and created a masterpiece." Sten, a speedrunner with a fondness for the *Mario* series in general and *Super Mario World* in specific, agrees that it was a major accomplishment. "I reckon the biggest advance in the formula was *Super Mario Bros 3*, which added the world map, letting you choose different paths, and different levels. It also made better use of secret areas, adding hidden items and power-ups to them, giving more of an incentive to explore every last inch of a stage. These have both been carried on into the rest of the 2D *Mario* games in some form or another," he tells us. "Lastly, it expanded the power-ups beyond just mushroom and fire. Every game from *Super Mario Bros 3* onwards has had some sort of new, usually unique, power-up to change things up a bit. Each game has added something new to give things a bit of a twist, but the overall formula has basically remained the same since *Super Mario Bros 3*."

Where previous games had featured broadly linear level progression, warp zones excepted, Nintendo introduced a new feature that fundamentally changed the way that players approached the game without interfering with the platforming one bit. Map-based level selection transformed the structure of the series, removing the linearity of the experience by letting players choose the order in which they challenged stages, or indeed whether they played them at all. "*Mario* games going nonlinear essentially removed that potentially problematic aspect of their gameplay where you can get stuck at a certain point and feel like you're banging your head against a brick wall. The nonlinear *Mario* games empowered players to play the game at their own pace and tackle things in the order that they wanted," says Julian. "Got stuck on a level? You can try playing a completely different map, and maybe learn a few things there that would help you get past the point where you were originally stuck. Or it would at least let you return to it with a fresh perspective."

Super Mario Bros 3 also started a tradition of refreshing the power-up selection with each game. "*Mario* games generally feature the same 'classic' power-ups, but introduce new elements with each

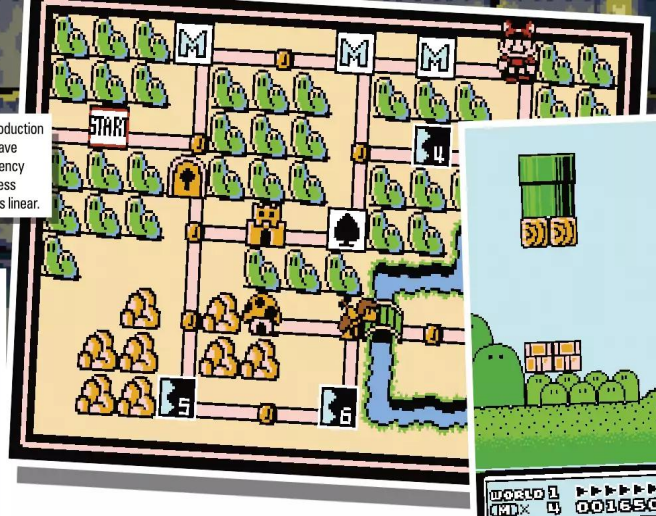


"The level introduces the game elements piece by piece, basically letting you experiment with Goombas and mushrooms and jumping and figure out how everything works before slowly combining things and adding more danger and consequences," says Sten. Indeed, the final stretch of the stage combines everything you've learned so far en route to the goal flag.

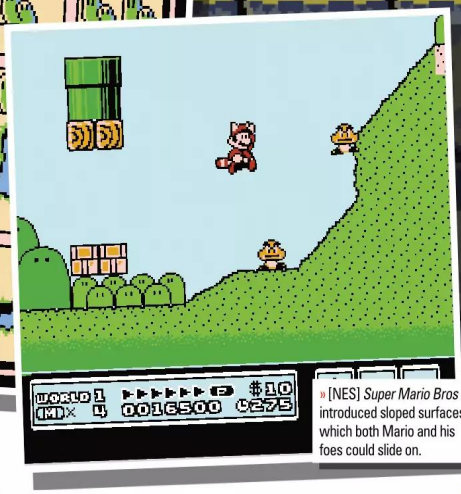


If you visit the secret coin stash by going down the pipe earlier in the level, you'll emerge from this pipe very near to the end of the level. Although it's a fun level to replay, the use of a secret that only a moderately experienced player would be aware of allows you to skip much of the game's informal tutorial – a clever choice on Nintendo's behalf.

Providing a staircase doesn't just assist players in reaching the top goal flag – it gives players the idea that they should be doing so in the first place. In later stages, variations on this structure signal the end of a stage, in a useful little piece of visual signposting. They also create miniature challenges for the player as they try to work around the changes to keep reaching the top.



» [NES] The introduction of world maps gave players more agency and made progress considerably less linear.



» [NES] *Super Mario Bros 3* introduced sloped surfaces, which both Mario and his foes could slide on.

additional entry in the series. In other words, the series sticks to its fundamentals while adding new and special power-ups that are unique to each game. To me, that's a stroke of genius," says Julian. "Whenever you started playing a brand-new *Mario* game, you had no idea of what to expect. It made the game exciting to play. You knew that you'd be running, jumping, swimming, growing and shrinking, and firing missiles at enemies – but you had no idea what else would be in store. *Super Mario 3* had items like the Tanooki and Frog suits that gave you completely new powers, and that was really good fun." Where *Super Mario Bros*' power-ups had dealt with combat, these ones trod new ground by improving his ability to traverse stages.

Following *Super Mario Bros 3*, the introduction of the Game Boy saw the parallel *Super Mario Land* line developed. The first game borrowed heavily from the original *Super Mario Bros*, though it did have unique mechanical wrinkles like Powerball Mario and shoot-'em-up sections, while the second took after *Super Mario Bros 3* with more complex stage designs and a world map. Though both were great, neither contributed so much to the series' long-term development as the next major home console game, *Super Mario World* – a launch game for Nintendo's new 16-bit console, the SNES. As well as featuring significantly improved graphics, the sequel expanded on the map system of the previous game, introduced the new Cape Feather power-up, and added Yoshi as a companion character for Mario to ride.

The new inclusions were a hit – particularly *Mario*'s new pal, who quickly became popular enough for his own spin-offs. "I loved the addition of being able to ride Yoshi in *Super Mario World*," says Kevin Bayliss, an artist with experience on hit 2D platformers at Rare and Playtonic. "Not only does it look super cute and cool, but it opened up a whole new dynamic within the game, which is now the kind of thing you automatically associate with the series. This is something that has continued and been expanded upon both in 2D and 3D *Mario* games, and it's one of my favourite features." But it wasn't just the new power-ups that impressed players, as even small level design features did a lot of work. "The iron fences that you climbed, with a little gate that flipped you from the front to the back of the fence – that was such a lovely, clever little idea, expanding on what the player was already familiar with, but adding a new dimension," says Ste.

One of the big advancements in *Super Mario World* was the ability for players to alter the layout of stages by activating new blocks in the Switch Palace stages. "I believe that in *Super Mario World*, the dotted-line blocks were added as a means for the player to adjust the difficulty themselves, with the intention that if the switches were all activated the game would become much easier," highlights Chris. "What it adds is replayability to existing levels. From a development perspective that's a good option, as it is much faster than crafting whole new levels, but it also has benefits for the players too. By having reasons to repeat play, players are encouraged to experiment in levels they already know and perhaps find secrets they didn't spot first time around." In fact, Chris believes that the design actively works towards this. "It's often interesting to consider why a particular design decision was made; in *Super Mario World*, they could have opted to not show the dotted-line blocks in the levels until the Switch Palaces were activated, but instead by having them visible in the levels they set up recurring questions in players' minds, so that when the Switch Palace is triggered it acts as a reminder of those queries, producing that feeling of, 'Oh! So now if I go back to that point in that level…'"

Since *Super Mario World*, 2D platformers have taken something of a back seat in the *Mario* series. *Yoshi's Island* introduced a whole new formula, and it wouldn't be until *New Super Mario Bros* in 2006 that the series returned to 2D. That game was a joy to behold, as enemies hopped to the beat of the music and Mario could shrink to microscopic levels or grow to screen-sized proportions. However, being designed as a somewhat nostalgic experience, the game didn't make huge mechanical strides beyond the introduction of moves from the 3D games. Indeed, this has been one of the problems that Nintendo has faced with subsequent entries in the *New Super Mario Bros* series. The developers have tinkered around the edges of the formula, introducing simultaneous multiplayer and features designed to make use of the Wii and Wii U's unique controllers, but despite massive sales they've been criticised as 'safe' and 'by-the-numbers'. They're still considered to be better than the vast majority of platform games, and that highlights the difficulty Nintendo's designers face as victims of their own past successes – how can they expand on a formula that's already considered by many to be peerless?

Of course, you don't have to guess how hard it is to make *Mario* games. Previously restricted to the

BREAKING THE RULES

The Super Mario Maker community has come up with plenty of stages that do things Nintendo never would. Here's a look at some of those things – as well as some Super Mario Maker 2 stages that do them…

AUTO-MARIO

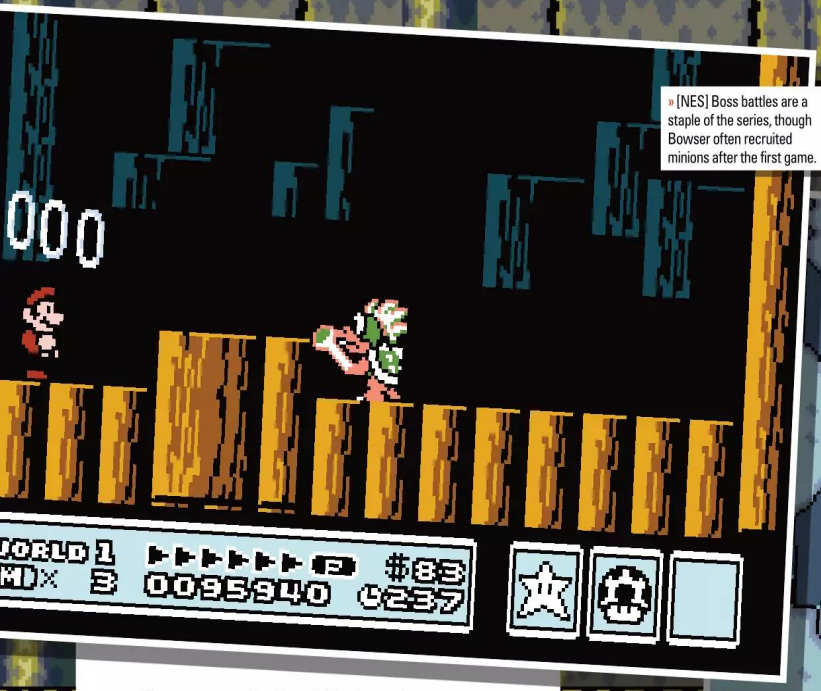
These aren't like the autoscrolling stages in *Mario* games – these are more like Rube Goldberg machines. In these spectacular demonstrations, which sometimes involve music, a variety of objects will push Mario to the end of the stage automatically as long as you either press nothing or hold a specific direction.

RISKY RIDE
3JV-B3N-HXG

METAGAMES

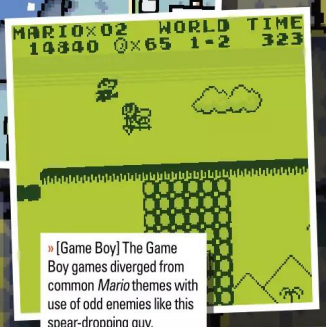
These stages use *Mario* mechanics to produce an entirely different experience, often based on other videogames. We've seen examples including a crafty take on *Pac-Man*, a brilliant claw machine and various 'table tennis' levels, as well as a recreation of *Teenage Mutant Ninja Turtles*' infamous dam stage.

3D MAZE HOUSE
P59-698-55G

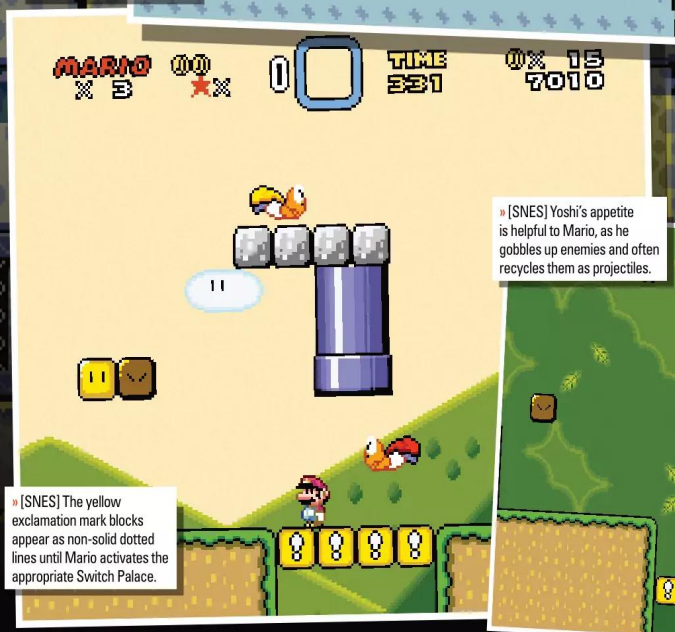


» [NES] Boss battles are a staple of the series, though Bowser often recruited minions after the first game.

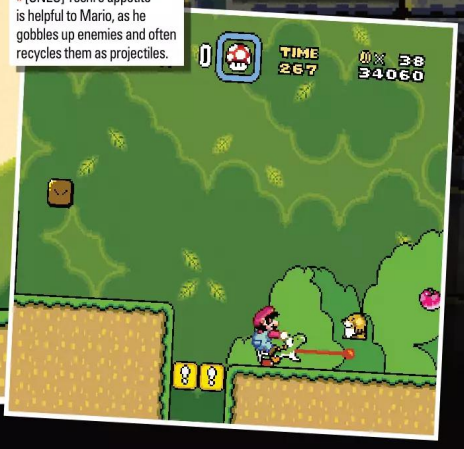
» [SNES] The *Super Mario World* map was more complex than before, with plenty of alternate routes and warps.



» [Game Boy] The Game Boy games diverged from common *Mario* themes with use of odd enemies like this spear-dropping guy.



» [SNES] The yellow exclamation mark blocks appear as non-solid dotted lines until Mario activates the appropriate Switch Palace.



» [SNES] Yoshi's appetite is helpful to Mario, as he gobbles up enemies and often recycles them as projectiles.

modding community, the ability to make your own *Mario* stages has been officially available to millions of players since 2015, thanks to the *Super Mario Maker* games. Seeing what players did with Nintendo's tools quickly showed that there were plenty of things Nintendo had never done – and just as often, provided convincing arguments for why Nintendo doesn't do them. "The Nintendo level design style is to introduce a new element gently and then give the player progressively more challenging scenarios with it. Along the way, there are many secrets and small side paths for particularly observant players. It's very much the hand of a gentle but playful teacher," says Derek. "On the other hand, players tend to design *Mario* levels with the intention of subverting expectations and offering extra challenges way beyond what you would find in an official level."

Since much of the appeal of the *Super Mario Maker* games comes from experiencing designs that break Nintendo's unspoken rules, it's no surprise to find that those stages dominate the popularity rankings, with few traditional stages making much impact. However, animator Ross O'Donovan does design some of these – often making them hard but fair, to infuriate his fellow Game Grumps on YouTube. "I feel that as new mechanics, obstacles and such are added to the game, it opens up

▲ CHALLENGE-FREE STAGES

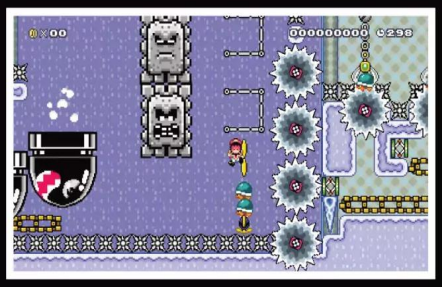
Almost every *Mario* stage, right from 1-1, has been intended to challenge the player. These stages make it very difficult or even impossible to lose a life, instead concentrating on offering the player a different sort of fun, such as mass destruction or fast movement. Unlike auto-Mario stages, they do require interaction.

DE-STRESS LAND!
VVV-G3W-VBG

▲ NARRATIVE STAGES

In stages like this, *Mario* mechanics are warped to fit the designer's chosen narrative. These cover everything from the philosophical nightmare of 'Waluigi's Unbearable Existence' to the weirdness of '1-1.exe has encountered an error', and even funny stages like 'Mario looks for an outhouse', in which our hero needs the loo.

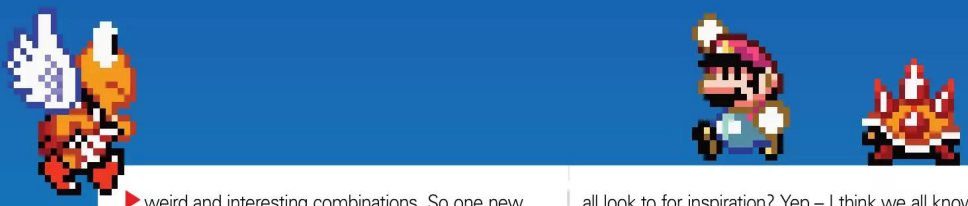
MARIO GOES TO MCDONALDS
K4W-FG2-HFF

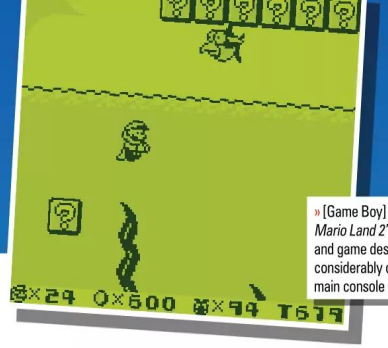


▲ KAIZO STAGES

Named after an infamous hack from *Super Mario World*, these stages are typically brutally hard and the design does things that feel unfair, such as starting the player directly beneath a deadly Thwomp. As a result, they typically require trial and error to beat, as well as precise timing and mastery of the mechanics.

SIBERIAN SHELL SUMMIT
BHF-JNW-22H





» [Game Boy] *Super Mario Land 2*'s graphics and game design were considerably closer to the main console *Mario* games.

weird and interesting combinations. So one new deadly obstacle combined with a variety of others can potentially open up many new avenues in terms of level design," he says, in admiration of Nintendo's designs. "I like seeing how they accomplish this and slowly build up the challenges with these obstacles as the levels progress." So how do you make a level like the pros? "I feel that it's important to pick a core mechanic to explore for the level, then find creative ways to expand upon it and have the difficulty gradually increase," says Ross. "Without any sort of cohesion, the level just feels thrown together at random and isn't really rewarding gradually mastering any given obstacle. Find something you want to explore and stick to it!"

Though it's hard to make great levels even with such a rich toolset, it's far harder to build an original platform game, and many of our interviewees have done just that. "*Commander Keen* was very similar to *Mario* in several ways, purposefully," says John. "We hid secrets all over the place because they're fun to find, just like the *Mario* games. The *Keen* games encourage exploration, but also have lots of puzzles in them with keys, doors and switches. Even using your pogo stick to break stuff."

For Kevin, *Mario* is simply the natural point of reference for the platform genre. "If that's the kind of game you're gonna make, the first thing I would ask myself is, 'What would *Mario* do here?' and quite rightly so. You know if you consider that, then you're going to be going down the right tracks," he notes. "When we recently created *Yooka Laylee And The Impossible Lair*, the team are of course experienced with the 2D platform scene having been heavily involved with the original *Donkey Kong Country*. But what game did we all play when we were rendering DK and Diddy all of those years ago at Rare? What did we all look to for inspiration? Yep – I think we all know the answer to that one!" Chris provides a bit more insight as to what was going on in Twycross all those years ago. "The inspiration from Mario in *Donkey Kong Country* was perhaps more related to the design approach, not just in the physical creation (we'd heard Miyamoto had designed with Post-It notes, and inspired by this Gregg Mayles tried these same little paper tools), but also that we recognised how *Mario* games would implicitly teach the player. So whenever a new enemy or mechanic was introduced, you'd encounter the simplest version first, with later encounters adding further challenge and complexity."

Derek aspires to match something quite different. "One thing I studied closely while working on *Spelunky* were the little touches in modern *Mario* games – the 'poofs' that appear when *Mario* runs, the sparkles that appear when he grabs a coin, etc. When we think of game design, we often think of mechanics and levels, but game design includes everything in a game," he explains, highlighting the level of polish that is common in *Mario* games. "For me, a big reason why *Mario* is so enjoyable are those flourishes that we're not always conscious of but we definitely feel as we play."

Of course, designers have to walk a fine line between borrowing *Mario*'s best elements and making something meaningfully different, and Ste is a strong advocate of this approach as evidenced in the design of *Plok*. "We definitely had the idea of mocking *Mario*, gently at least, with things like the buried flags at the end of each level on the first island, and we were obviously influenced in a general way, but we definitely consciously tried to be different," he explains. "We've never been comfortable with ripping off other games, so once we'd decided to make a game in *Mario*'s genre that was as close as we wanted to get, and after that we tried to be a little bit different. I think we were more concerned with trying to match *Mario*'s level of quality and polish rather than with taking specific ideas. The fact that Nintendo borrowed (or coincidentally came up with the same ideas as us, a little bit later on) from *Plok* in *Yoshi's Island* shows that we were on the right track in terms of quality and ideas."

Commander Keen had its own points of divergence, too. "We broke with *Mario* design tradition and didn't have any forced-progression levels where the level is constantly scrolling and you're trying to deal with it," says John, though he notes that differentiation was never a conscious goal. "If something from *Mario* made *Keen* better, we absolutely wanted to use it. We never said, 'Don't do that because it's like *Mario*.' Quite the opposite." Differentiation was also achieved unconsciously in *Donkey Kong Country*, as Chris explains. "The *Donkey Kong Country* titles did take a 2.5D approach as opposed to the pure 2D side-on in *Mario*, but that was less of a *Mario* differentiation choice and more a choice because it would better present the prerendered visuals and allow competition with other visually impressive platformers such as *Aladdin*."

But while plenty of great platform games have come and gone, none have matched the long-term success and impact of the plumber's adventures – and if anyone's going to neatly encapsulate why, a veteran wordsmith like Julian is the man. "Each new 2D *Mario* game built on the foundations of its predecessor by introducing fun new game mechanics and systems that made them even more addictive and entertaining," he says. "Indeed, going back and playing the original *Super Mario Bros* after experiencing the likes of *Super Mario Bros 3* and *Super Mario World* makes the original game feel quite basic. Brilliant though *Super Mario Bros* is, it just seems simple in terms of its gameplay after you've spun, flown, climbed, flung vegetables and generally explored the far richer worlds of its successors. But the thing is, while those newer games added additional layers of sophistication to their gameplay, none lost sight of what makes the series so fun to play. They didn't deviate from the fundamental formula that makes *Mario* games so distinctive – which is superb and highly addictive platforming action." ✱

» [DS] Smashing through the world as Mega Mario was great fun, though it didn't ultimately add too much value.

» [Wii] Simultaneous multiplayer has been a rarity in 2D *Mario* games, but *New Super Mario Bros Wii* focused on it heavily.

» [3DS] *New Super Mario Bros 2*'s key gimmick was a coin extravaganza, the novelty of which soon wore off.

AN EXTRA DIMENSION

DESPITE BEING A 3D GAME, SUPER MARIO 64 HAD A HUGE INFLUENCE ON THE MODERN MOVES THAT MARIO CAN PULL OFF IN HIS 2D ADVENTURES

TRIPLE JUMP

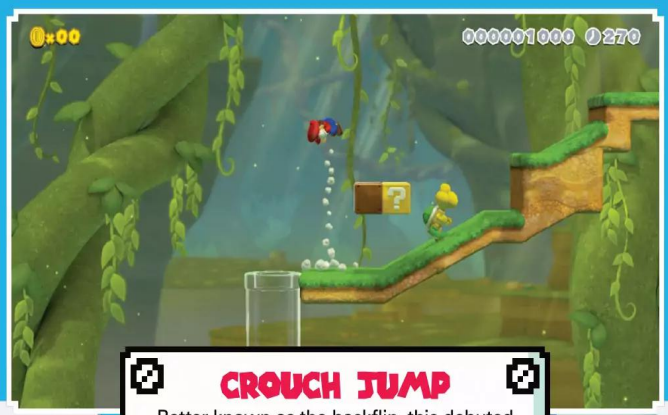
New Super Mario Bros first imported this move, which enables Mario to gain extra height by pulling off a succession of three well-timed jumps – the last of which elicits a gleeful "woohoo!"from the hero.

WALL JUMP

The *New Super Mario Bros* implementation of this move has more in common with *Super Mario Sunshine* than *Super Mario 64*, as Mario can slide down the wall before jumping.

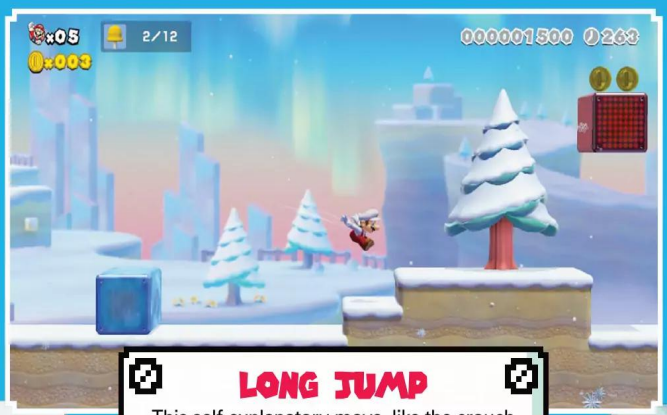
GROUND POUND

Mario originally borrowed this move from his dinosaur pal Yoshi, and it went 2D in *New Super Mario Bros.* Mario can slam directly downwards mid-jump, in order to break blocks and defeat enemies.



CROUCH JUMP

Better known as the backflip, this debuted in 2D *Mario* games as part of the *Super Mario 3D World* style in *Super Mario Maker 2*. Crouch for a while before jumping for some extra height!



LONG JUMP

This self-explanatory move, like the crouch jump, arrived as part of *Super Mario Maker 2*'s *Super Mario 3D World* style. Unlike the 3D games, you can just press R while running – no need to crouch first.

SUITS YOU, SIR

MARIO HAS HAD A NUMBER OF SUITS AND TRANSFORMATIONS IN HIS 2D ADVENTURES – LET'S RUMMAGE THROUGH HIS WARDROBE

FLYING SQUIRREL MARIO

NEW SUPER MARIO BROS U

This suit gives more limited gliding functions than the Cape, but it allows Mario to stick to walls and pipes, and gives him greater spin jump height.

ICE MARIO

NEW SUPER MARIO BROS WII

This counterpart to Fire Mario can counter enemy fireballs and freeze regular enemies with ice balls, but can't hurt larger enemies and bosses.

TANOOKI MARIO

SUPER MARIO BROS 3

This has all the powers of the Raccoon suit, but also allows Mario to turn into an invincible statue – which gives him a great slam attack if you perform it in midair.

PROPELLER MARIO

NEW SUPER MARIO BROS WII

With a deft waggle of the Wii remote, Mario can use this suit to fly upwards into the air, reaching new heights and escaping enemies.

COSTUME MARIO

SUPER MARIO MAKER

Using Amiibo figures, you could unlock plenty of different characters for everyone's favourite plumber to cosplay as, to amusing effect.

WEIRD MARIO

SUPER MARIO MAKER

This oddball transformation makes Mario weird and lanky, and gives him his brother's physics – so floaty jumps and terrible land traction, then.

MEGA MARIO

NEW SUPER MARIO BROS

Mario goes kaiju! This time-limited transformation allows Mario to stomp through the stage destroying all in his path, and earning lives for it.

OFF THE WALL

Attempting to put good design principles into practice, we designed a stage in *Super Mario Maker 2*. This moderately challenging stage is all about making use of Mario's slide and wall jump moves to avoid hazards, with extra rewards available to players willing to take some risks. You can watch us play through it at youtu.be/Lkau5K014SU, or try it for yourself with the level code 69V-F3C-B1H. Let us know what you think!

FROG MARIO
SUPER MARIO BROS 3
This suit is kind of rubbish on land, though it does increase Mario's jump height, but in the water it makes him considerably better at swimming.

BUNNY MARIO
SUPER MARIO LAND 2: 6 GOLDEN COINS
Donning a pair of rabbit ears gives Mario enhanced jumps, as well as the ability to slow his descent and glide in the air.

SUPERBALL MARIO
SUPER MARIO LAND
This is like Fire Mario, but rather than bouncing along the floor, superballs continue after rebounding off any surface, collecting coins as they go.

HAMMER MARIO
SUPER MARIO BROS 3
The Hammer Bros are fearsome enemies, and this allows Mario to take on their signature ability, throwing hammers in tricky arcs to defeat enemies.

RACCOON MARIO
SUPER MARIO BROS 3
As well as gaining a neat tail whip attack, Mario gains the ability to slow his descents. Get up to top speed then jump, and he'll soar into the air, too.

CAT MARIO
SUPER MARIO MAKER 2
Imported from *Super Mario 3D World*, this allows Mario to scramble up the sides of platforms, as well as unleash a frontal paw swipe attack.

FIRE MARIO
SUPER MARIO BROS
Flower power allows Mario to shoot a bouncing fireball, which will hurt most of the enemies he encounters. Like other forms, it also shields Mario.

CAPED MARIO
SUPER MARIO WORLD
This offers similar powers to Raccoon Mario, but with the awesome ability to perform bouncing glide moves once Mario's been launched skyward.

SUPER MARIO
SUPER MARIO BROS
He's like that regular Mario bloke, but taller. In this form, he struggles with small spaces but can take a hit from an enemy without dying.

BUILDER MARIO
SUPER MARIO MAKER 2
In a throwback to the *Donkey Kong* days, Builder Mario is armed with a hammer! He can also create up to five Builder Boxes to aid himself.

MINI MARIO
NEW SUPER MARIO BROS
Even smaller than regular Mario, this form offers little benefit other than the ability to enter small spaces that Mario's other forms can't.

PENGUIN MARIO
NEW SUPER MARIO BROS WII
Ice Mario has nothing on this – Penguin Mario can slide on his belly, and doesn't have to worry about slipping on ice thanks to improved traction.

SHELL MARIO
NEW SUPER MARIO BROS
Dressing up in a Koopa shell allows Mario to retreat and shield himself from attacks, and he can launch into a spinning attack by sprinting.

The Making Of Alex Kidd In Miracle World

As well as being the first game that many Master System players ever got their hands on, Alex Kidd's debut adventure was one of the system's best. Rieko Kodama joins us to look back at how this ambitious platform adventure came together

WORDS BY NICK THORPE

IN THE KNOW

- **PUBLISHER:** SEGA
- **DEVELOPER:** IN-HOUSE
- **RELEASED:** 1986
- **PLATFORM:** MASTER SYSTEM
- **GENRE:** PLATFORMER

It has long been said that history is written by the winners, often as a lament by the defeated side of a conflict. This is as true in videogame history as it is in any other field, and if you ever needed proof, *Alex Kidd* should be all you need. As a figurehead for the Master System, he has often been derided as a '*Mario* clone' by fans of the more popular NES, and sidelined as 'Sonic's unsuccessful precursor' by those who found Sega during the Mega Drive boom years. But if you free yourself of the need to make such comparisons, *Alex Kidd In Miracle World* stands out as a very ambitious game for its era, and one that is still a fondly remembered introduction to console gaming for many players of a certain age.

It's fair to say that while Sega did have an eye on *Super Mario Bros*, the truth of *Alex Kidd*'s origin is far more interesting. In an interview for the 'Meisaku Album' section of Sega's Japanese website, translated by Shmuplations, planner Kotaro Hayashida (credited simply as 'Kotaro') explained the initial goals of the project. "Sega had just put out the new Mark III, and they tasked us in the Second Development unit to create something that would sell as well as *Mario*," Hayashida revealed. "Our initial plans were for an adventure game with action elements. It was something close to what we call 'action RPGs' today." In John Szczepaniak's book *The Untold History Of Japanese Game Developers: Volume 3*, Hayashida further elaborated that the game was actually intended as a licensed game. "First, Sega were planning on making a *Dragon Ball* game, but later we were told that we couldn't use the licence any more and we had to come up with our own idea," he said. "So, for example, when it was *Dragon Ball*, Goku fought with his Power Pole, but we changed that to a punch attack." This had been alluded to in the Meisaku Album interview, where Hayashida discussed how *Alex Kidd* originally fought with the Nyoibo (magic staff) before he "became more of an original character".

While the characters and world had been sketched by Hayashida, other people were required to bring them to life. The artist that designed Alex Kidd himself had previously worked on the Master System conversion of *Fantasy Zone*, and is only known by her pseudonymous credit Yoko Matilda. The name Alex Kidd was suggested by Hayashida's supervisor, *Flicky* designer Youji Ishii. In his interview with John Szczepaniak, Hayashida explained that his original choice of name was Alex Ossale, but that Ishii had preferred a name that played to the game's young audience. This was originally Alex Kid, before Kidd was adopted as a proper surname – something that may please the ▶

» Rieko Kodama is a Sega legend. She joined the company in 1984 and has worked across many of its landmark titles.

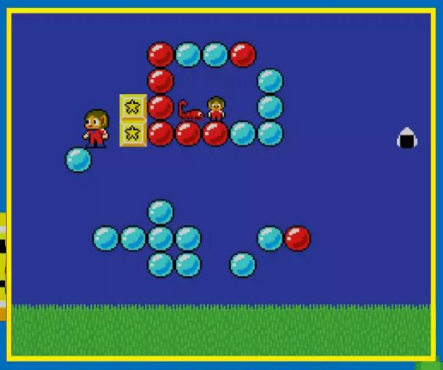
» Héctor Toro is an artist for Jankenteam and a big fan of *Alex Kidd*. He's currently adding his own style to the new game.

» Jankenteam designer, José Sanz is hard at work on *Alex Kidd In Miracle World DX*. You can see his efforts in 2021.

» [Master System] Shooting projectiles is hugely useful, so the Power Bracelet is a good item to find.

» [Master System] The frog-like Merman launches an arc of bubbles upwards, so it's safest to approach from below.

» [Master System] The motorbike initially seems quite overpowered, but its speed can be a liability in later levels.



» [Master System] Your skills in navigating stages and finding secrets are frequently rewarded, with extra money and items.

▶ people who continue to mistakenly call the character 'Alex The Kid' to this day. Later to join the project was artist Rieko Kodama (credited as 'Rie Wakashimizu'). "At that time, *Dragon Ball* was extremely popular and I can understand Hayashida-san wanted to make a game of it," she says. However, her own involvement began when the project was already well underway. "As I remember, I was not involved in the planning stage. When I joined the project, the character Alex Kidd was already set."

How much did Kodama know about the intent behind the design of Alex Kidd as a character? "I was not responsible for character design so I cannot say for sure," she responds. "I think the initiative was to make him more comical, and [they] designed him with an animation hero-like image – and, just like many fans say, Son-Goku of *Journey To The West*." says Kodama of her colleague's work. *Journey To The West* was also the basis for *Dragon Ball*, so it's no surprise to see the classic Chinese novel referenced here, too. Héctor Toro, the art director at Jankenteam – a team of *Alex Kidd* fans who are developing the official remake, *Alex Kidd In Miracle World DX* – recalls his initial reaction to the game's hero: "When I was a kid, I was not aware of the physical characteristics of the character, I just saw a child punching. It didn't even surprise me that his fist [was] the same size as his head... but today I see him as a character with courage, a sense of justice and peace."

DEVELOPER HIGHLIGHTS

PIT POT
SYSTEM: MASTER SYSTEM
YEAR: 1985

PHANTASY STAR (PICTURED)
SYSTEM: MASTER SYSTEM
YEAR: 1987

SONIC THE HEDGEHOG
SYSTEM: MEGA DRIVE
YEAR: 1991

Considering those influences, Alex Kidd was in many ways an archetypal hero, with his red jumpsuit, slightly monkey-like features and big appetite. However, when seen snacking on his favourite food between stages, Alex was eating something that would prove unfamiliar to western audiences – onigiri, aptly named 'rice balls' in the western manuals. "The reason why Alex likes onigiri could be simply because onigiri is one typical food in Japan," says Kodama. "At the time the game was made, we did not think that *Alex Kidd* would be released in the west. Therefore, we simply put Japanese traditional ideas like onigiri and janken. I am very surprised that in present day fans are still enjoying Alex Kidd and show their love [for] watching him eating his onigiri."

Kodama was still very new to Sega, in only her second year with the company, but she was given major responsibility for *Alex Kidd In Miracle World*. "I felt happy to be given full responsibility for the title screen and backgrounds," she explains. The background graphics that she drew were based on a range of environments that the planner had specified. "In [the] planning stage, Hayashida-san wanted Alex to have his adventure in various places," the artist recalls. "In terms of background design, maps were made with stacking tons of blocks. Backgrounds were drawn without mapping. I started with drawing blocks, changing their colours trying to show animated movement. Lava and underwater were some examples."

From a home console perspective, *Alex Kidd In Miracle World* was a state-of-the-art project. The Mark III hardware had only been introduced in October 1985 and still had the best graphical capabilities of any console on the market. But despite being so new to the company, Kodama had enjoyed the benefit of using arcade hardware for the previous project she had worked on, *Quartet*. Coming from hardware that would provide the basis for the Mega Drive, Kodama couldn't help but see Sega's 8-bit console as a step down. "In that time arcade motherboards would go first, and household consoles always had to try to catch up," she says of the difference. "Mark III did not have multiple scrolling background nor good colour capability." Still, working with the comparatively limited platform was a challenge that she relished. "We tried to fully utilise the features of Mark III/Master System. It was fun trying to push the limits of the hardware."

The project wasn't just special because of the hardware it was running on, as the game had also been afforded a 128KB cartridge. This was a big deal – *Alex Kidd* would be only the sixth Sega console game to have such a large cartridge, which was four times what developers had previously been given to work with, even for high-profile arcade conversions like *Hang-On*. Still, Kodama felt that economical usage of that space was still a wise choice, as evidenced by her approach to the game's title screen. "I tried to show Alex's adventure like a comic book. By doing so I could use the same graphics as in the game without using extra memory," she recalls. "This is something we do not take into consideration these days. In the past, we always tired to save a bit of memory here and there, and consume them at the climax."

As well as giving Alex a wide range of environments to traverse, the use of the 128KB cartridge ensured that he would have a good variety of enemies to encounter. Most of them are drawn from the world of nature, as he'll fight plenty of frogs, fish, scorpions and other creatures of the wild, but there are some more creative additions, too. The bubble-blowing Merman ▶

RADAXIAN HIGH STREET

ALEX KIDD RELIES ON PLENTY OF ITEMS DURING HIS QUEST TO DEFEAT JANKEN THE GREAT – SOME OF WHICH HE CAN FIND IN THE WORLD, WHILE OTHERS ARE AVAILABLE IN SHOPS. HERE'S THE COMPLETE CATALOGUE

REGULAR ITEMS

ONIGIRI

Alex's favourite food appears at the end of each stage and must be collected in order to finish. In some versions it's a hamburger.

POWER BRACELET

Once activated, this bracelet allows Alex to fire off projectiles for the remainder of the stage, unless he loses a life or stumbles into water.

EXTRA LIFE

This one is pretty self-explanatory. It can be found in the wild and is the most expensive item in the game's shops, selling for 500.

CANE OF FLIGHT

This shop-only item costs 120, and enables Alex to fly for a short period. Watch out, as there's no warning when the effect ends.

TELEPORTATION POWDER

This useful item costs 100 and allows Alex to pass through enemies without harm for a short period. It doesn't work on spikes or pits.

TELEPATHY BALL

This rare item lets Alex see what his opponent is planning in janken battles. It's only found in Mount Kave and the Radaxian Castle.

MAGIC CAPSULE A

This capsule spawns eight miniature Alex Kidds, which run forward and attack enemies. For 100, it's a good way to beat tough foes.

MAGIC CAPSULE B

For 120, this capsule will shield you against enemy attacks for a limited time, but Alex can't perform any attacks while it's active.

SUKOPAKO MOTORCYCLE

This speedy vehicle costs 200, and ploughs through enemies and rocks alike. You have to use it in the stage you buy it, and it doesn't reverse!

PETICOPTER

For 200, Alex can fly through the air by hitting the jump button repeatedly. He can also fire missiles to take out pesky enemies.

TREASURES

SUN STONE MEDALLION

One of the two items Alex needs to access the final stage and one he cannot miss – it's given to him before the game and can't be lost.

MOONLIGHT STONE MEDALLION

The other item Alex needs to unlock the final room is gained after defeating Janken. Even if you deliberately avoid picking it up.

SIGNED LETTER

This letter is found in the Radaxian Castle. High Stone Of Nibana will only hand over the Hirotta Stone if you have this in your possession.

HIROTTA STONE

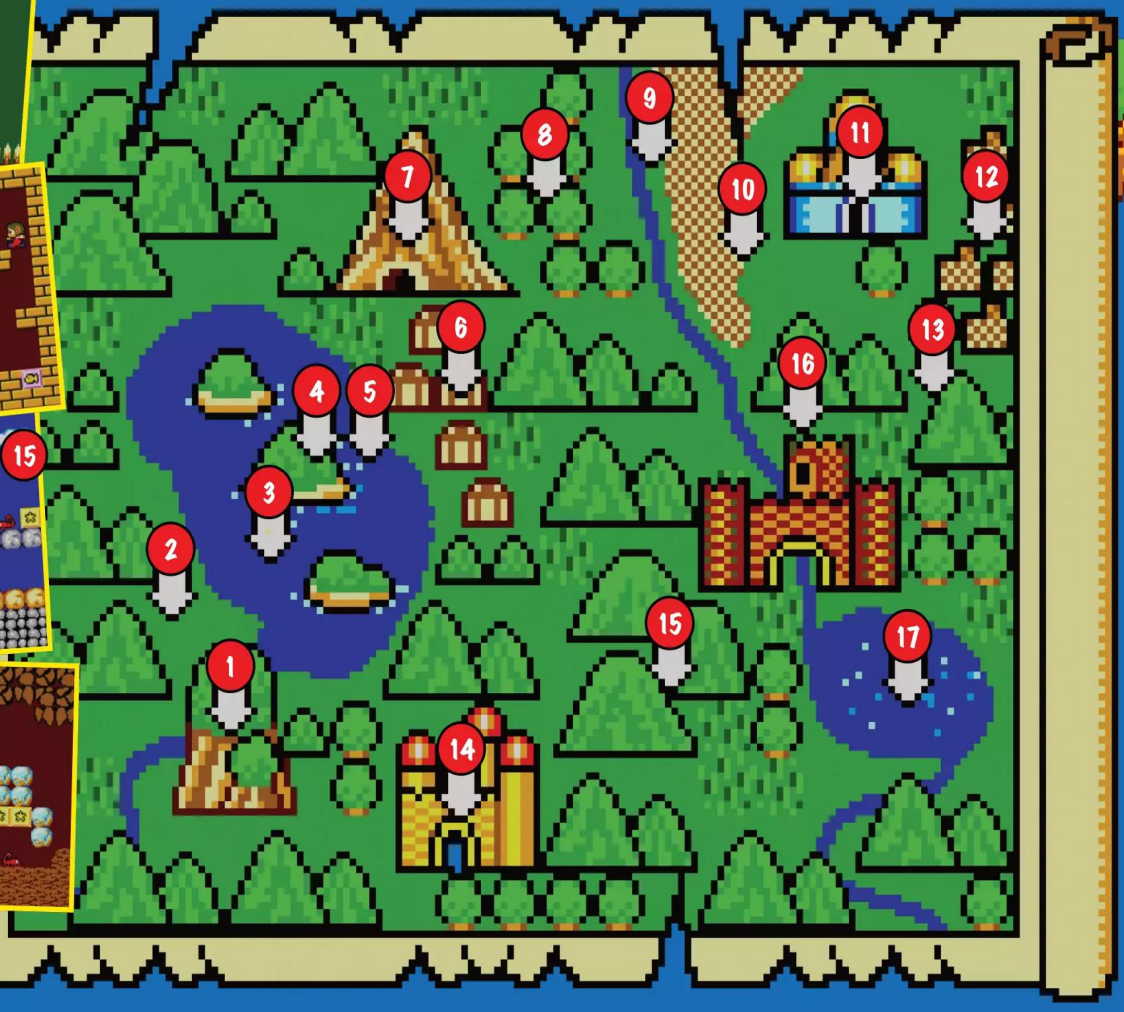
A stone tablet used to reveal the game's final treasure. The mysterious symbols must be read from top to bottom, right to left.

GOLD CROWN

Janken has turned the citizens of Radaxian to stone, and this magical treasure can reverse that. Obtaining it is Alex's ultimate goal.

MIRACLE WORLD TOUR

ALEX WILL HAVE TO TRAVEL ACROSS LAND, SEA AND AIR TO SAVE HIS FAMILY AND THE PEOPLE OF RADAXIAN – HERE'S A LOOK AT THE LOCATIONS IN MORE DETAIL



MOUNT ETERNAL

1 Descending from his secluded training grounds, Alex must watch out for monster birds and the occasional ghost. Once you reach the bottom of the mountain, a river full of poisonous fish awaits.

THE ROAD TO LAKE FATHOM

2 Monster frogs, scorpions and mountainous block formations threaten to impede your way, but they're little trouble if you have a motorbike. Stone Head makes his first appearance at the end of this stage.

LAKE FATHOM

3 Alex can swim across this lake, but that's the easy route. If he chooses to fight the first octopus, he can travel through the secret passage it guards to reach an island full of cash and a bonus life.

THE ISLAND OF SAINT NURARI

4 High walls and deadly pits of lava are the hazards that Alex must brave to reach his spiritual father, Saint Nurari. This is where Alex learns his own history, and gains the Peticopter for the next stage.

CROSSING TO NAMUI

5 The sky above the water is full of riches, but one wrong move will send Alex plummeting into the less-rewarding sea below. No matter where you finish the level, your next destination will be the same.

THE VILLAGE OF NAMUI

6 Alex encounters invincible fire enemies for the first time here, but a Peticopter will help if he can afford it. Once you defeat the rampaging bull, a villager will let Alex know where his brother is held.

MOUNT KAVE

7 Bats, ghosts, rolling rocks and lava are tough obstacles for Alex to pass, and Scissors Head awaits if he can. Thankfully, the telepathy ball found here will help to defeat Janken's second henchman.

THE BLAKWOODS

8 You can buy a motorbike here, but you might want to think twice about it – the spike traps make it a risky proposition. Monkeys are annoying enemies, and the sword-wielding bear is a tricky fight, too.

BINGOO RIVER

9 Alex gets a boat to start this stage, but one crash will see him swimming through treacherous waters. It's tricky to keep the boat intact, but the extra cash on offer makes it very worthwhile.

BINGOO LOWLAND

10 Swampy marshes and ever-present lightning clouds make this area difficult on foot. A Peticopter is highly recommended. Janken's henchman Paper Head awaits at the end of this stage.

THE RADAXIAN CASTLE

11 Alex's brother Egle is being held captive in this fortress. Free him, then fight your way through to a second encounter with Stone Head, who will no longer accept defeat graciously.

THE CITY OF RADAXIAN

12 Small statues are found all over Alex's home town, which starts a trend of very short stages. This one features a small amount of platforming, a shop and your second encounter with Scissors Head.

THE PATH TO NIBANA

13 The game's only stage that scrolls to the left is also Alex's final Peticopter challenge. Losing the vehicle here is effectively a lost life, as it's impossible to clear much of the level without it.

THE KINGDOM OF NIBANA

14 If you picked up the letter to High Stone in the Radaxian Castle, he'll provide you with a tablet inscribed with mysterious symbols. That may come in handy later, and it's the only thing to see here.

JOURNEY TO JANKEN'S FORTRESS

15 The last chance for Alex to ride a motorbike, this stage is something of a breather before the tough closing stretch if you can keep it. Your final encounter with Paper Head takes place here, too.

JANKEN'S FORTRESS

16 Like any villain worth his salt, Janken has created a lair filled with fiendish traps including poisoned gas and trap doors. Find him, beat him at his own game, punch him and rescue Princess Lora.

CRAGG LAKE

17 Deep below the lake, a secret chamber hides the ultimate prize, the crown that will restore Radaxian's citizens – but beware, as a ghostly danger awaits those who don't know how to reveal it.

encountered in the underwater stages is a highlight, both for its visual design and its attack pattern, while the Hopper stands out more for its oddness – though again, this is only to western audiences, as Japanese players would be familiar with the Daruma, a traditional Japanese doll that appears in many children's games. "The Daruma was an 'angry tomato' to me," notes Héctor. "The enemy of 'Death' to me was a kind of sea seal,"

The game's soundtrack was composed by Tokuhiko Uwabo, whose previous works had included the Japan-only game *Satellite 7* and the Master System versions of *Choplifter* and *Fantasy Zone*. He chose to create musical themes based on the action Alex was currently performing, and plenty of them are memorable – most notably the underwater and motorbike themes. However, the cheery main overworld theme, which also provides the basis for the title screen, level start and ending themes, is the one that has become most associated with *Alex Kidd*. As well as appearing in *Alex Kidd In The Enchanted Castle*, the theme follows him into his later appearances in games such as *Segagaga* and *Sonic & All-Stars Racing Transformed*.

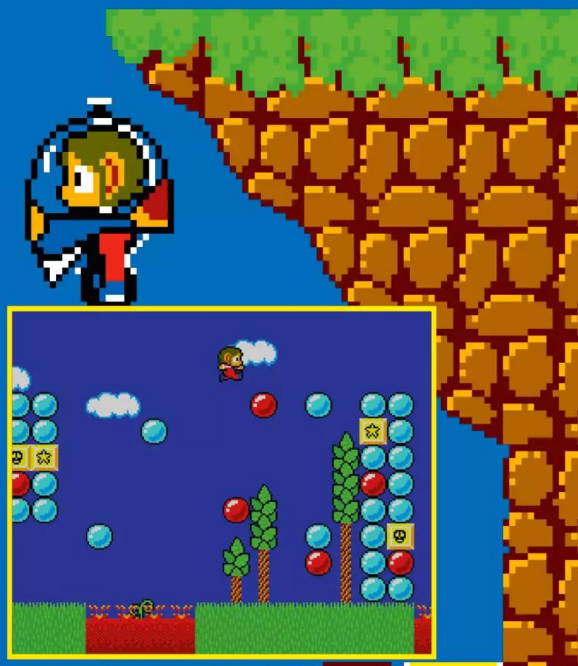
Of course, the game design bringing all of these elements together is key, and on a superficial level it is much like *Super Mario Bros* – Alex runs and jumps through the environment, battling enemies and smashing blocks to get through each stage. Rather than jumping up to hit blocks from below, Alex uses a more conventional forward punch – and the blocks that he encounters are far easier to read. Star blocks will always contain money, skull blocks temporarily stun Alex, and question mark blocks broadly contain useful items but may contain a deadly ghost. The enemies, it must be said, are a little less sophisticated than those found in *Super Mario Bros* – while their behaviours are certainly solid, most of them have very fixed patterns of movement. Only the ghost and monkey base their attacks on Alex's position, and there's no secondary behaviours to note, like the clever way that Koopa shells are used.

What really sets *Alex Kidd In Miracle World* apart from its contemporaries is the ambition of the development team, which provided the game with enough depth to ensure that it remained relevant well beyond its initial release. "I begun playing videogames in 1991," says Ramón Nafria, producer at Jankenteam. "Sonic was able to roll. Mario was able to convert into Super Mario and throw fireballs. Alex Kidd was able to shoot 'kames', ride a bike, a Peticopter, a boat, fly, and read the mind of the enemies," he explains in reference to *Alex Kidd*'s versatility. "I think it is quite a technical feat for that time," says José Sanz, game designer at Jankenteam. "Even today, as I investigate how the original team did [it] to apply it in the remake, I am very amazed at everything they did. Original battles against the bosses, the initial vertical phase, the vehicles, the shops and monetary system, the camera and style of 'dungeons' in castles."

Indeed, collecting sacks of cash feels much less like collecting arbitrary tokens than it does in many other platform games, thanks to the inclusion of shops and a permanent inventory. Beyond that, the vehicles add some real variety to the gameplay that was hard to come by in 1986. "Again, this is an idea from Hayashida-san," says Kodama. "'Hero crashes into bad guys on a motocycle!' is something we saw from superhero shows. It is easy to imagine Alex Kidd has different rides like a hero. Other than that, inspiration could have come from gadget cars in *Bond* movies, or futuristic items in *Doraemon*." Transitions feel natural, too – if you lose your vehicle over the water, you can still swim to the end of a stage.

Additionally, the incorporation of adventure elements help to distinguish the game. The way the map screen shows your progress through Miracle World is quite novel amongst console platformers of the time, as is the fact that the game doesn't end with the defeat of the final boss, but the retrieval of the final quest item. The use of a small cast of characters with a significant amount of dialogue clues players into the existence of the secondary objectives that, while not strictly necessary, do help you to complete the game – if you don't rescue Egle, you won't get the letter to High Stone, who subsequently won't give you the stone tablet containing the correct sequence of moves required to beat the final stage. Having said that, ambitious experimentation can lead to some failures, and the final stage is arguably one of them. There can't have been many players outside Japan who would have guessed that the symbols on that stone tablet, much like vertically written Japanese text, were intended to be read from in columns from right-to-left.

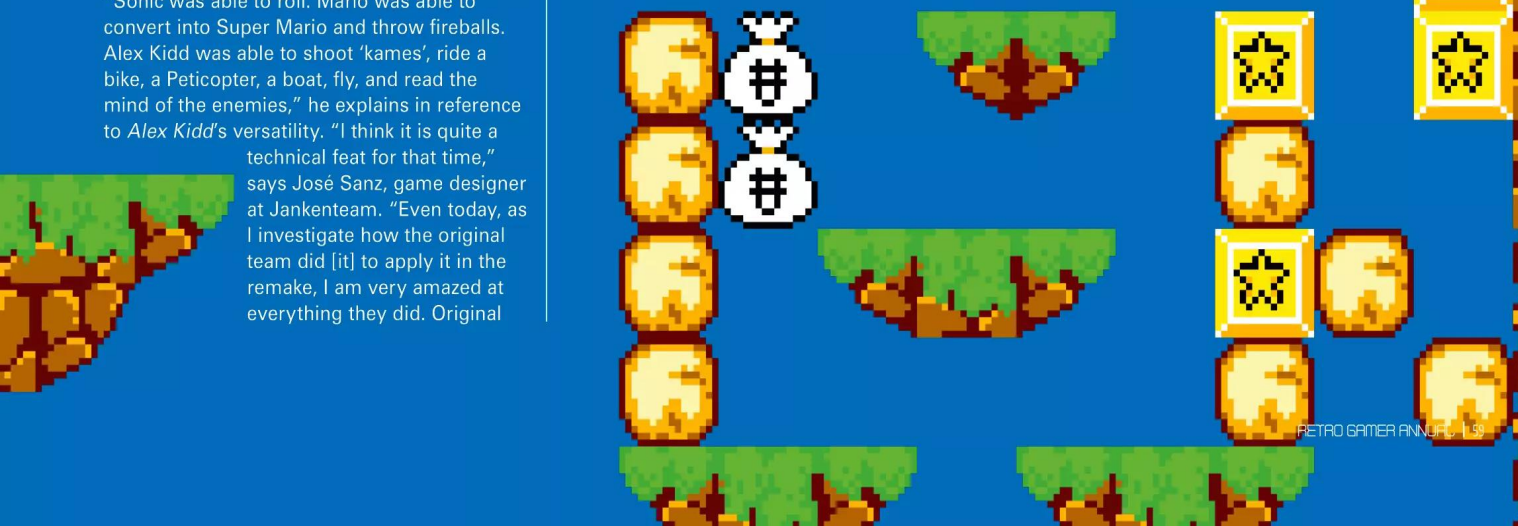
Speaking of wayward experiments, one of the most commonly criticised aspects of the game is one of its most distinctive features – the use of rock paper scissors as a boss battle mechanic. It's difficult to imagine the game without it, as the team leaned into the theme heavily. The main villain, Janken The Great, takes his name from the Japanese name for the game, and his three henchmen have heads resembling the game's three hand symbols – an idea that Kodama credits to Hayashida. "The

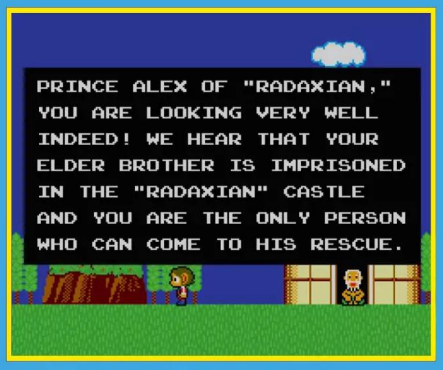


» [Master System] The game has no time limit, which is welcome in tricky jumping sections like this.

» [Master System] A dip in the deep often serves as an alternative way to clear vehicle-based levels.

» [Master System] Items from boxes disappear after a short while, so you'll need to grab extra lives quickly when they appear.




PRINCE ALEX OF "RADAXIAN,"
YOU ARE LOOKING VERY WELL
INDEED! WE HEAR THAT YOUR
ELDER BROTHER IS IMPRISONED
IN THE "RADAXIAN" CASTLE
AND YOU ARE THE ONLY PERSON
WHO CAN COME TO HIS RESCUE.

» [Master System] Though the 'wall of text' execution may be clumsy, the occasional bits of dialogue do add a lot to the experience.

» [Master System] Ghosts are quite annoying – they can't be killed and will chase you until they're out of view.

▶ style of 'boss with three henchmen' probably came from the animations like *Time Bokan* and *Yatterman* of Tatsunoko Production," she explains. "In many of these anime, there were always three somehow boneheaded henchmen under the boss. This is the stereotype animation we saw when we were children. It is hard to hate them even as enemies." However, while the character designs it inspired were memorable, Hayashida has expressed regret over the mechanic in retrospective interviews, saying that it "wasn't a great fit for an action game" due to the reliance on memorisation over practised skills.

Alex Kidd In Miracle World was released in Japan in November 1986, with a North American release following soon after. In the US, the *Computer Entertainer* newsletter gave the game 3.5/4 for both graphics and gameplay, and stated that the game was "one of those delightful games with lots of surprises and things to discover". Writing in *Video Games & Computer Entertainment*, reviewer Clayton Walnum noted the game's similarity to *Super Mario Bros* but remarked that it was "far from a clone" and "about as addicting as games come", praising its graphics, sound effects and challenge. As with many early Master System games, only retrospective reviews are available from UK publications. *The Complete Guide To Consoles* from *CVG* scored the game 87% in 1989, singing the praises of its "great graphics and sound, and, most importantly, thoroughly absorbing gameplay". In 1991, *Sega Pro*'s very first issue gave *Alex Kidd In Miracle World* a score of 95% on the basis that it offered "so much to do and so many different ways of doing it".

The game undoubtedly received a major boost from Sega's decision to build the game into Master System consoles. "*Alex Kidd*, like many other people, was the first videogame I played," says Héctor. "It was probably because it came preinstalled in the memory of the Sega Master System II, but the infinite hours I spent with my brother made me remember this game with special affection." PAL Master System consoles had featured the game since late 1988, though it was one of a few options at that time – Master System Plus buyers would get *Hang-On* and *Safari Hunt*, and Super System bundles included *Missile Defense 3-D*. When the Master System II came along, *Alex Kidd* became the game of choice worldwide. All North American versions of the console include the game, but European models replaced *Alex Kidd* with *Sonic The Hedgehog* from late 1992. The built-in version made some minor changes, reversing the jump and punch buttons to the more conventional layout, and replacing Alex's treasured onigiri with hamburgers for the western audience.

The development team went on to achieve further success together. "After *Alex Kidd*, I was involved in background design of *Phantasy Star* and *Sonic*. Those backgrounds were made

GOKU WHO?

IT'S FAIR TO SAY THAT SOME VESTIGES OF THE PLAN TO CREATE A DRAGON BALL GAME REMAIN IN ALEX KIDD IN MIRACLE WORLD – JUST TAKE A LOOK AT THESE COMPARISONS

TELEPATHY BALL

In the *Dragon Ball* series, the titular items enable those who possess them to make wishes. The orange balls come in sets of seven, each bearing up to seven red stars. The telepathy ball in *Alex Kidd In Miracle World* is visually similar, being blue rather than orange, and grants Alex the ability to see his opponent's janken moves.

BEAR THIEF

In the third episode of *Dragon Ball*, Goku faces off against a large bear armed with a massive sword. The major enemy at the end of the Blakwood in *Alex Kidd In Miracle World* is very similarly designed, with enough changes to its colour and costume to be distinct, while still bearing obvious signs of its inspiration.

JANKEN

As well as being a popular game in Japan, janken – or rock paper scissors – is the basis of one of Goku's signature attacks, though they're more directly applied. For example, scissors becomes a poke in the eyes. *Alex Kidd*'s use of the game is more conventional, with no contact made between players.

JANKEN THE GREAT

Speaking of janken, this one's a little loose but it seems the game's villain evolved from the *Dragon Ball* baddie Emperor Pilaf. Janken is taller but his silhouette is pretty similar, with those pointy ears and angled eyes. His clothing isn't identical, but you can definitely note the resemblance in his hat and the circular motif on his top.

BIG EATER

Both Goku and Alex have major appetites, and don't mind the odd onigiri. Goku's diet is a bit more diverse, but to be fair he wasn't limited to 128KB of ROM space. Other tales use this trope, too – the Japanese manga and anime series *Saiyuki*, also inspired by *Journey To The West*, also depicts Son Goku as a voracious eater.

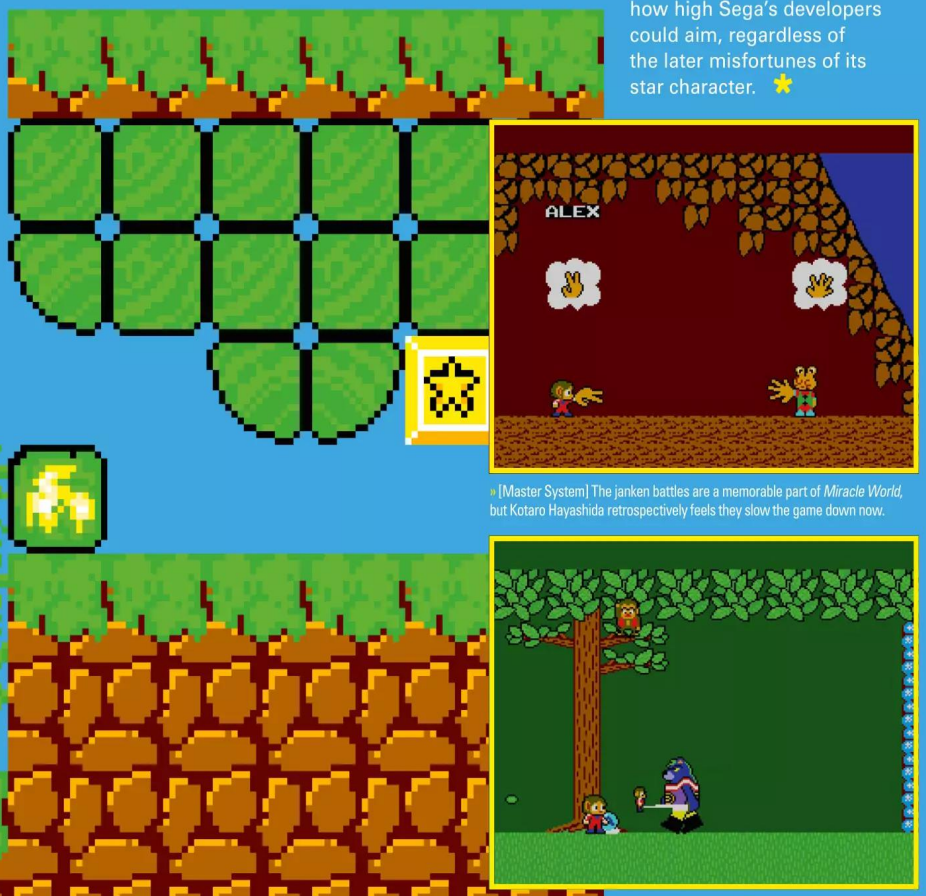
DRAGON BALL IMAGES COPYRIGHT © TOEI ANIMATION

from the skills I learned from *Alex Kidd*," says Kodama. Hayashida and Uwabo joined her on the *Phantasy Star* team, and created a classic RPG that stands as another of the Master System's finest games. Also members of that team were Yuji Naka and Naoto Ohshima, whom Kodama worked with on *Sonic The Hedgehog* – the character that would ultimately usurp Alex Kidd's position as Sega's mascot.

Unfortunately for Alex Kidd, while Sega promoted him as its star through the late Eighties, he never quite delivered as hoped. In part, that must be due to the inconsistency of his games. *Alex Kidd: The Lost Stars* was a passable arcade platformer that lacked a lot of *Miracle World*'s notable features, and was only mildly well-received on the Master System. *Alex Kidd In High-Tech World* was a rebranded version of the anime tie-in *Anmitsu Hime*, a mediocre and obtuse action adventure game, while the top-down racer *Alex Kidd: BMX Trial* never made it out of Japan. The Mega Drive launch game *Alex Kidd In The Enchanted Castle* was the closest we ever got to a true *Miracle World* sequel, but its simplified nature, loose controls and increased use of rock paper scissors battles meant that it wasn't as well received. Only *Alex Kidd In Shinobi World*, a parody crossover with Sega's famous ninja series, really hit the heights of the original game. For 30 years it seemed that *Alex Kidd* would be consigned to the history books, until the recent surprise announcement of the remake project *Alex Kidd In Miracle World DX*, developed by Jankenteam and published by Merge Games.

While fans have brought *Alex Kidd* back to the market, it's only right that Rieko Kodama should have the final word – one that she would never imagine having back in 1986. "I felt it was a well-balanced package among game design, graphics and sound. However, I could not imagine it would go so deep into fans' memories," she says. It seems like she's feeling the same excitement for the remake as the rest of us, too. "I am honoured to see the fans' reactions. I heard that the members of the development team of *Miracle World DX* are also all-time fans of *Alex Kidd*. Their love moved them to present this remake to us in Sega. Although development just started, I am sure they will do their best with love. I wish all fans who want to go adventure with Alex Kidd can feel their spirit, and I am looking forward to see Alex making his new steps."

But with *Alex Kidd In Miracle World DX* not due for release until 2021, there's plenty of time for you to reacquaint yourself with the original, and appreciate it for what it is – a platform game that showcased just how high Sega's developers could aim, regardless of the later misfortunes of its star character. ★



» [Master System] The janken battles are a memorable part of *Miracle World*, but Kotaro Hayashida retrospectively feels they slow the game down now.

» [Master System] Animal sub-boss fights are pretty simple, and even easier with the Magic Capsule A.

CONVERSION CAPERS

FOR ALL ITS POPULARITY, ALEX KIDD IN MIRACLE WORLD HAS SELDOM BEEN PORTED, BUT ITS MORE RECENT RELEASES ARE WORTH CHECKING OUT

Though Sega was one of the earliest publishers to realise the potential of its back catalogue, and has put out a variety of retro releases and compilations over the years, *Alex Kidd In Miracle World* is a game that is frequently overlooked. A version was announced for PlayStation 2 as part of the Japanese *Sega Ages 2500* range, but ultimately never saw release. As a result, it took over 20 years for any other platform to receive the game, with the wait finally ended by a Wii Virtual Console release in 2008. In 2012, *Sega Vintage Collection: Alex Kidd & Co* brought the game to Xbox 360 and PlayStation 3, in a package with *Super Hang-On* and *The Revenge Of Shinobi*. This version allowed you to choose your regional variation and offered a wealth of display options, as well as support for achievements and trophies.

The definitive version of *Alex Kidd In Miracle World* is the *Sega Ages* version developed by M2, released for Nintendo Switch in 2019. This version features a soundtrack that uses the Mark III's optional FM sound module, which had yet to be released when *Alex Kidd In Miracle World* was developed, and adds extra plot-related visuals between stages. The game also features online rankings, time attack and a rewind feature to alleviate some of the game's challenge. Additionally, it allows you to choose your preferred regional release, and features the usual *Sega Ages* variety of display filters.

» [PC] In the top-right corner, you can see a quick item menu that should make equipping the Power Bracelet a bit smoother.

» [PC] Classic Mode uses the full screen, enabling you to see further ahead than before.

ALEX KIDD IN MIRACLE WORLD DX

» [PC] It looks like some stages will take place at different times of day, which should add visual variety.

» [PC] Changes are visible from the very first screen – check out the extra NPC.

After 30 years on the sidelines, Alex Kidd is back in a starring role with a remake of his first adventure. We speak to the developers at Jankenteam to find out more about how the project is coming together

In recent years, Sega's classic properties have been given a new lease of life due to the publisher's new policy of giving skilled fans the reins to its classic properties, even going so far as to licence some of them to other publishers. *Sonic Mania* was a shot in the arm for the wayward series, while the likes of *Wonder Boy* and *Streets Of Rage* are more relevant now than they have been in decades thanks to projects that capture the spirit and quality of the originals. The latest team to take on this challenge is Jankenteam, a group of *Alex Kidd* fans from Spain who are developing *Alex Kidd In Miracle World DX* to be published by Merge Games.

The project has its origins in an unofficial effort to remake the game, started by art director Héctor Toro and game designer José Sanz. "We fantasised about making a new version of *Alex Kidd*," Héctor tells us. "Two days later, I sent [José] sprites of the character for fun and he programmed the movements in Game Maker. In the next week, and without realising, we were doing a whole remake." The project was well-received on social media, and started on the path to becoming officially licensed when the duo got on-board with producer Ramón Nafria, who had long wanted to work with the character. "I had another company (A Crowd of Monsters, now in administration)," Ramón tells us. "In 2014, I approached Sega with the intention of licensing *Alex Kidd*, and with the help of José, Héctor, Bibiki [José Ramón Garcia] and Merge Games, we were able to finally do it."

JOSÉ RAMON GARCIA
» Musician

RAMON NAFRIA
» Producer

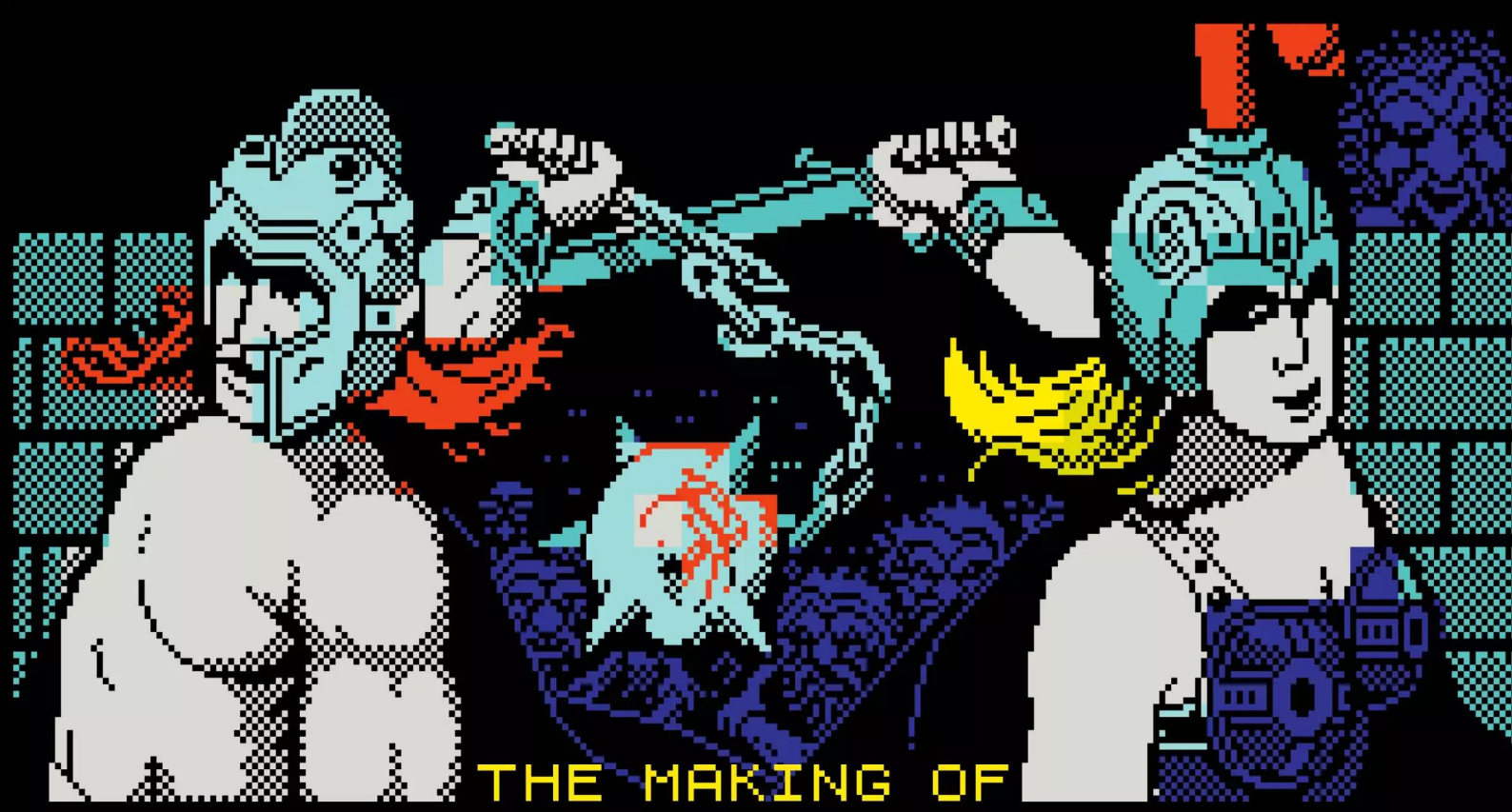
As you'd expect, the game will be getting a major graphical overhaul, with Héctor employing a cartoonish style, using pixel art of a higher resolution than the original game. "Above all, I wanted to keep the essence of the original game," says Héctor. "Dotemu with Lizardcube are doing a great and excellent job with the return of *Streets Of Rage* and *Wonder Boy*, but they have Ben Fiquet who has an amazing talent and a wonderful pencil stroke. I don't want anyone to compare me to him, or compare me to his projects, or think I'm trying to copy his styles," he continues. "That's why I think that mixing pixel art with a cartoon style and keeping the basic principles of cartoon animation would bring a fresh air to pixel art and create a mark that would differentiate us from other remake or revival projects."

Music is also being reimagined, by José Ramón 'Bibiki' Garcia. "*Alex Kidd*'s melodies are part of many people's childhoods," he tells us. "Due to this, the new tracks are inspired directly by the original soundtrack style. In terms of melodies, construction and harmonic progressions, plus other music styles and genres, [we're] creating a unique aesthetic that (I hope) fits with the new remastered style while keeping the retro feeling." But while the graphics hark back to simpler times, you shouldn't be expecting to hear any chiptunes. "Even though it is important to keep the original feeling, instrumentation has changed completely. Since we are not using Eighties chips anymore, a new audio identity is required, so get ready to be surprised!"

However, the most intriguing news is that the gameplay will be given something of an overhaul, with the promise of improved combat, alternative boss fights and even brand-new stages. "There are levels that lack length or playable details," says José Sanz. "The idea is to improve and expand all those sections of the game in which a revision is needed." Héctor elaborates on this a little further: "I think it was important to explain the story a little more deeply. For example, how does Alex get into Janken The Great's castle? Wouldn't it be logical that there would be a level before entering the castle, where Janken's soldiers would be defending the castle walls? That kind of thing and many others are the questions we ask ourselves when making the game." As for the boss fights, José sees them as an elaboration on the originals. "In the original game, besides the janken fights, the bosses also had a little action phase," he explains. "The idea is to respect the janken, since it is a strange but beloved mechanic, but to improve those action phases with the bosses, making them more thematic and fun."

Jankenteam and Merge Games are working together with Sega to ensure that the game keeps the spirit of the series. "There is a team inside Sega related to these things, and we receive feedback from people that were part of the development team," says Ramón Nafria, Jankenteam's producer. "We really love to see things like that happen, because one of my dreams when I approached Sega for the first time was exactly this, to be able to work with some of their legendary developers." Still, if this all sounds like a bit too much change, there will be a 'Classic Mode' available to play the original game, with full widescreen presentation."

Alex Kidd In Miracle World DX is scheduled for release in 2021, across PC and consoles. That's a long time away, so we had one final question that couldn't wait until later – will Alex eat onigiri or burgers in this version? "We are Spanish. No burgers or onigiris," jokes Héctor. "Paella Valenciana or Spanish omelette!"



THE MAKING OF Gauntlet

The Deeper Dungeons

Dare you join Warrior, Valkyrie, Wizard and Elf in The Deeper Dungeons? That was the challenge issued by US Gold when it released a brand new set of levels for its hit Gauntlet conversion. But these were no ordinary dungeons...

WORDS BY MARTYN CARROLL

IN THE KNOW

- **PUBLISHER:** US GOLD
- **DEVELOPER:** GREMLIN BIRMINGHAM
- **RELEASED:** 1987
- **PLATFORM:** C64, AMSTRAD CPC, ZX SPECTRUM, MSX, ATARI 8-BIT
- **GENRE:** MAZE GAME

Atari's *Gauntlet* was a memorable arcade game for many reasons, but there was one feature that would have a lasting impact on the industry. In a bid to boost takings, project leader Ed Logg engineered a four-player experience where players could feed in coins to prolong play, and crucially, new players could rock up and join a game that was already in-progress. This 'buy-in' feature would quickly become commonplace in multiplayer arcade games.

There was no 'end' to *Gauntlet* – the levels just kept looping after a certain point – so part of the appeal was to see how long you could survive the dungeons on a single credit. This was lost on the home versions that followed, as you could continue ad infinitum providing one player stayed alive, but these releases sowed the seeds for something that, over time, would have an ever greater impact on the wider videogame industry.

Tucked away on the inlay to US Gold's home versions was a competition. The text read: "In early 1987, US Gold will release an expansion cassette for *Gauntlet* containing hundreds of new levels and treasure rooms. You have the chance to have your own maze included!" Instructions were provided on how players could devise and submit their own dungeon designs, with the lure of *Gauntlet* T-shirts as prizes. Sure enough, *Gauntlet: The Deeper Dungeons* soon arrived as a data tape/disk that required the original game to run (when the game asked you to flip the tape or disk over to load the levels, you inserted *The Deeper Dungeons* instead). It wasn't the first expansion pack, but it was certainly the first to popularise a concept that would become prevalent later on and manifest itself in the digital age as DLC.

The idea for *The Deeper Dungeons* arrived during the development of the original game. US Gold had hired Gremlin Graphics to undertake

DEVELOPER HIGHLIGHTS

GAUNTLET
SYSTEM: VARIOUS
YEAR: 1986

MASK (PICTURED)
SYSTEM: C64, AMSTRAD CPC, ZX SPECTRUM
YEAR: 1988

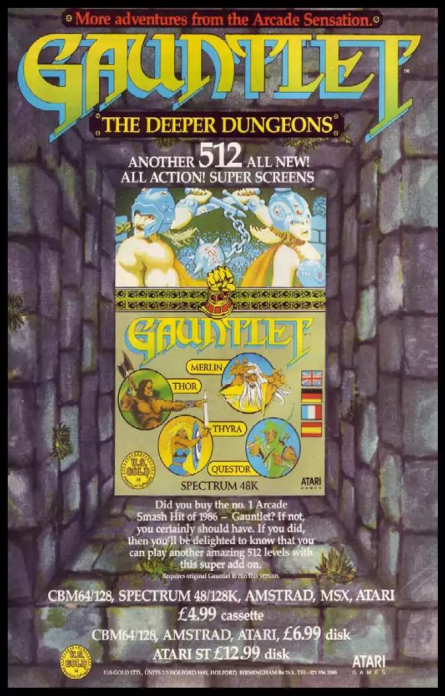
SKATE CRAZY
SYSTEM: C64, AMSTRAD CPC, ZX SPECTRUM
YEAR: 1988

» [ZX Spectrum] One creator has added a traditional 'Hi mum!' message to their level.

the conversions, and the team had relocated to US Gold's West Midlands base where they became known as Gremlin Birmingham. Programmer Stuart Gregg, who joined halfway through the development in a support role, remembers that the impetus came from the US Gold boss. "Geoff [Brown] came up with the idea, when he saw us using our *Gauntlet* map editor," he says, referring to the tool that Z80 programmer Tony Porter had created to simplify the process of adding all the maps to the different versions of the game. "He used to come and visit us more than a few times a day. I think having a development team in-house was a novelty for him and he enjoyed it."

On seeing how easy it was for the team to add levels using the editor (each level was a grid made up of 32x32 blocks, and it was simply a case of adding a wall, monster, item or other attribute to each block), Geoff figured that just about anyone could do it – and so the idea for an expansion filled with user-designed dungeons was born. The competition was added to the inlay and a steady flow of entries soon began to arrive at the office. The door to the Deeper Dungeons had opened.

The job of reviewing the entries and selecting which ones made the cut fell to graphics artist Kevin Bulmer. "Kev did most of the sorting, then we all got a chance to look through them," recalls Stuart. "Once the choices were made Kev and [6502 coder] Bill Allen did the bulk of the work, but we all did a few levels." Although no additional programming was involved, the job of entering the data remained, as did 'fixing' some of the wilder entries so that they functioned as working, completable levels.


More adventures from the Arcade Sensation.
GAUNTLET
THE DEEPER DUNGEONS
ANOTHER 512 ALL NEW!
ALL ACTION! SUPER SCREENS
GAUNTLET
MERLIN
THOR
THYRA
QUESTOR
SPECTRUM 48K
Did you buy the no. 1 Arcade Smash Hit of 1986 – Gauntlet? If not, you certainly should have. If you did, then you'll be delighted to know that you can play another amazing 512 levels with this super add on.
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ATARI ST £12.99 disk
ATARI

» The game advertised a colossal 512 new levels, but in truth it was actually closer to half that number.

> "Geoff Brown came up with the idea when he saw us using our map editor"
> Stuart Gregg

» Chris Weirman, one of the lucky few whose devious dungeon was included in the expansion.

Lack of memory was the only real issue, as per usual. "The maps were packaged eight in a load," remembers Stuart, "and the biggest problem was making sure the levels were under a certain combined size. The game just loaded the next block of levels on the tape or disk so there wasn't that much to do. We planned it that way ahead of time so it was pretty easy for us to do *The Deeper Dungeons*."

The project may have been easy, but anyone who played the expansion knows that the new dungeons were anything but, with the challenge ranging from difficult to downright evil. Many levels were labyrinthine and filled with monster generators and poisoned food, and Death, that 200-health-harvesting bastard, was lurking around every corner. "We added purely what was submitted!" deflects Stuart when asked about the devious nature of the new levels. ▶

COMPETITION RESULTS:

Many of the mazes in Gauntlet – The Deeper Dungeons are based upon competition entries received from hundreds of entrants throughout Europe. We have chosen ten winners, but unfortunately we cannot tell you which Dungeon was designed by which winner because Gauntlet presents the levels randomly.

The following talented Dungeon Architects will each receive a Gauntlet T-Shirt and a copy of the program for their computer.

L.W.Nelson – Cranham, Upminster, Essex
M.Hutton – Newtown Mearns, Glasgow
A.Wallberg – Örebro, Sweden
I.Cox – Norton, Stourbridge
G.Reilly – Knowle, Bristol
R.Bell – Nantwich, Cheshire
C.Weirman – Llanelli
J.Spring – Ilford, Essex
I.Abbott – Dunstable, Bedfordshire
A.Singers – Lockerbie, Dumfriesshire.

» The ten winners were immortalised on the inlay card. Each will have their own tale to tell of the competition.

CONVERSION CAPERS

WHICH VERSIONS ARE WORTH DELVING FOR?

ZX SPECTRUM

Compromises were made with the black backgrounds and character-width scroll, but this is an excellent version that delivers an authentic experience (the addition of AY sound helps here). Sadly, the expansion was never released on disk, so players had to faff about with the tape multiload.

AMSTRAD CPC

Similar to the ZX Spectrum version, but with more colour and smoother scrolling which, visually at least, results in a closer approximation of the coin-op. The trade-off is that it runs a fair bit slower, particularly in some of the more manic dungeons. Still, a very accomplished effort.

MSX

MSX owners were accustomed to getting dodgy coin-op conversions from western developers, but this is a pleasant surprise. It obviously shares code with the ZX Spectrum version, but it has been optimised for the hardware and the sprites benefit from extra colour.

COMMODORE 64

This gets our vote for the best version. It's fast and frantic and feels just right. The original game was blasted for being glitchy on release, but we didn't notice any issues when playing *The Deeper Dungeons*, suggesting that some bug fixes may have been included in the expansion.

ATARI 8-BIT

Atari's 8-bit computer hardware was prehistoric compared to the 16-bit board used by the firm's coin-op division for *Gauntlet*, yet this home version ain't half bad. The visuals are muted and the action is sedate, meaning it plays quite differently, but you can't help but be impressed.

PLAYERS WIN PRIZES

MORE GAMES TIED TO COMPETITIONS

PIMANIA

■ In the first competition of its kind, Automata hid clues to the secret location of a golden sundial worth £6,000 in this bizarre text adventure from 1982. It was eventually found three years later by Sue Cooper and Lizi Newman who located it in the mouth of the Litlington White Horse in Sussex.

JET SET WILLY

■ Software Projects put up a case of champers and a helicopter ride with Matt Smith to the first person to complete the game. Cameron Else and Ross Holman 'won', as they revealed that the game couldn't be completed due to bugs. Cameron later converted the *Willy* games to the MSX.

LORDS OF MIDNIGHT

■ Beyond proposed to turn the quest of the first person to defeat Doomdark into a published fantasy novel. The firm was caught off-guard however, as someone submitted a completed quest after just two weeks. The player was rewarded for their efforts but sadly the novel never materialised.

Some of the guilty parties were named on the expansion inlay. "Many of the mazes are based upon competition entries received from hundreds of entrants throughout Europe," ran the text. "We have chosen ten winners. These talented dungeon architects will each receive a *Gauntlet* T-shirt and a copy of the program for their computer." One of the lucky winners was Chris Weirman of Llanelli, Wales, who was surprised to have won, and even more surprised to receive a call from **Retro Gamer** more than 30 years after the event.

Chris, who's now a technology director for a global materials manufacturer, was just 12 when he entered the competition. "I was an avid gamer back then and I loved playing *Gauntlet*, first in the arcades and then on my Spectrum," he tells us. "When I read about the chance to design a level I was really up for it. I remember asking my mum to get some squared paper and I sat down on the front room table to chew my pencil and try and create an impossible level."

Chris clearly spent some time on his level as he can still recall the layout. "I'm amazed how much I remember about it. I placed the start point in a corner with waves of Death characters coming in. Death could only be killed using a potion, so I did this to use up the player's potions before they had to negotiate a maze where the walls were the strongest ghost generators. You could shoot your way through the maze walls if you knew which direction the exit was but the spawn rate was high which made it slow, hard work. More Deaths were waiting within the maze so it turned out to be a pretty hard level. I also placed a risk and reward element as there were treasure chests hidden behind some more ghost generators."

With his nightmarish level finished, Chris eagerly posted it off to US Gold. "I guess I could have buried myself in levels before deciding on the one to enter, but my first attempt proved to be enough to win," he says. "I do

"I sat down to chew my pencil and try and create an impossible level"
Chris Weirman

» [ZX Spectrum] The enemy has amassed! Hey ho, just a typical day down in the Deeper Dungeons.

W*
YOU ARE IN A SMALL VILLAGE SOMEWHERE IN GERMANY. ROADS LEAD NORTH, SOUTH, EAST AND WEST.
N!
YOU ARE IN A CORNFIELD NORTH OF A SMALL VILLAGE AND THERE IS ANOTHER FIELD TO THE SOUTHEAST.

EUREKA!

■ This adventure game devised by Ian Livingstone and published by Domark offered up "250K of pure mystery" and a massive £25,000 cash prize to the first person to solve it. The winner was 15-year-old Matt Woodley who claimed the cash and then went to work for Domark for many years.

MOON CRESTA

■ Incentive regularly offered prizes and for this conversion it created a high score competition where a *Moon Cresta* arcade cab was up for grabs. Anyone scoring more than 30,000 points could enter and the lucky winner picked out of the hat was Ian Clark of Newcastle. Wonder if he still owns it?

» [C64] As in the original game, the opening dungeon offers exits to levels two, four and eight.

» [Amstrad CPC] Brief respite can be found in treasure rooms, where you have to grab as much loot as you can.

» [C64] Nine Deaths instantly rush your starting position. Par for the course, really.

» [Amstrad CPC] We can see the exit from the start point, but something tells us we'll be taking the long way round.

remember getting something through the post to inform me of winning but I definitely didn't receive a T-shirt or a copy of the game. I put this down to me maybe not putting down my size and my computer type, but it was a shame I didn't get the prize. I did save up my pocket money and bought the game following its release many months later and saw my name on the inlay card. And I did find my dungeon, and yes I did complete it!"

Finding a specific dungeon isn't as straightforward as you might think, largely due to the way the game presents the levels. Each data block typically includes eight standard dungeons and two treasure rooms, but of these the player is only required to play three dungeons and one treasure room, and they are selected at random. This was done to provide a varied set of levels each time you played.

There's also a huge number of levels included. The game's advertising claimed there were 512, but this is a bit of a fib. On the ZX Spectrum (which should be representative for all versions, as the level data was platform independent), there are actually 247 dungeons and 53 treasure rooms, making a total of 300 levels. Furthermore, a number of levels (particularly treasure rooms) are repeated in different data blocks, so the number of unique levels is closer to 250. On the other hand, each level could be flipped horizontally, flopped vertically, and also flip-flopped, so if you were taking variations into account there were actually many more than the advertised 512.

The Deeper Dungeons was released during summer 1987 for multiple platforms – Spectrum, Commodore 64, Amstrad CPC, MSX and Atari 8-bit (an Atari ST version was advertised but never released). As it required the original *Gauntlet* to run it was a cut-price release, costing £4.99 on tape and £6.99 on disk. The press reaction was warm to hot: most mags rated it around the 7/10 mark, while *Your Commodore* and *Atari User* awarded it 9/10. A couple of commentators bemoaned the lack of innovation, with one suggesting that features from the recently-released *Gauntlet II* coin-op could have been added, but it was blatantly obvious that US Gold had separate plans in that regard. Having completed *The Deeper Dungeons*, the same team moved on to the *Gauntlet II* conversion job (where Stuart took responsibility for coding the C64 version).

The sequel superseded the previous games thanks to a number of new gameplay features, but *The Deeper Dungeons* would live on. US Gold had included the original Gauntlet on its 1987 compilation Solid Gold, so when it needed another coin-op conversion for its next collection, *Arcade Force Four*, it opted for *The Deeper Dungeons*. So the game *was* released in standalone format, albeit as part of a compilation. Years later in 1992, *Gauntlet*, *The Deeper Dungeons* and *Gauntlet II* were bundled together as one of the 'Multimixx' packs (which saw US Gold wringing the last few dimes from the dying 8-bit market).

For Stuart and the Gremlin Birmingham team, this was just another job – an interesting one, but a job nonetheless. But for Chris and all the others players who had their creations included in a commercial release it was clearly something more. "US Gold really led the charge with player interaction with the competition," says Chris. "Overall it was a lovely exercise and I was thrilled to have won."

And for the rest of us, *The Deeper Dungeons* ushered in the concept of the videogame expansion; for better, for worse. None of the versions acknowledge the level creators in the actual game – except for the Amstrad CPC release. Here, having loaded in the expansion, a simple message is displayed on-screen: "Welcome to The Deeper Dungeons. These are your levels. Enjoy them!" ★

retro GAMER PRESENTS

THE 16-B

NINTENDO V

Everyone with even the slightest knowledge of the history of videogames knows about the great console war. By now it's pretty much accepted folklore that Sega, the plucky upstart with its exciting new mascot and lax stance on bitmapped bloodshed, strolled up to the arrogant giant Nintendo and gave it a big old smack in the mouth, loosening the *Mario* maker's monopolistic grip on the console market forever. But that's just the surface story. Few accounts of the period venture beyond North America, despite the fact that gaming in the late Eighties and early Nineties was far from a global business – the major markets around the world each had their own distinct regional character and preferences. By examining how the well-known American story compares to how the combatants fared in Europe, and particularly the UK, we can get a better picture of how some of each company's actions were driven by rigid corporate cultures, and how willing each was to be flexible in reacting to its circumstances.

BIT WAR

S SEGA

Mario or Sonic? SNES or Mega Drive? Innocuous questions now, but ones that inspired fierce tribal loyalty in gamers in the early Nineties. We speak to the men tasked with winning hearts and minds for their brands, in a conflict that was as much about image and attitude as graphics and gameplay

WORDS BY **NICK THORPE**

Of course, there's a reason that people focus on the North American market – as well as being the largest territory, it's also the most representative of the global average. This story starts with an event just as heavily ingrained in the videogaming mythos as the console war itself – Nintendo's revival of the North American console market, beginning with the 1985 launch of the NES in New York. Nintendo had shrewdly altered the Famicom for the needs of the market, creating a console that didn't look like previous ones, and bundling a toy robot so as to soothe retailers that were still reluctant to stock videogames. It's something that Tom Kalinske remembers well, as he was then at Mattel, which had recently been burned by the Intellivision's collapse during the disastrous 1983 market crash. "All of us who were watching this thought, 'Are you guys crazy? We just collapsed, how can you start getting into this business?' But we were all wrong, and they were right." The system succeeded ▶

WAR VETERANS

TOM KALINSKE

CEO, Sega Of America, 1990-1996

DON COYNER

Marketing manager, Nintendo Of America 1988-1995

NICK ALEXANDER

CEO, Virgin Mastertronic/Sega Europe 1988-1994

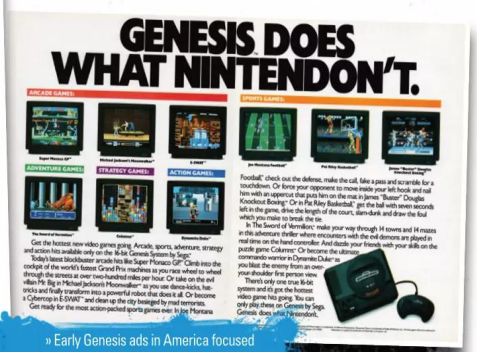
MIKE HAYES

Marketing director, Nintendo UK 1989-1994

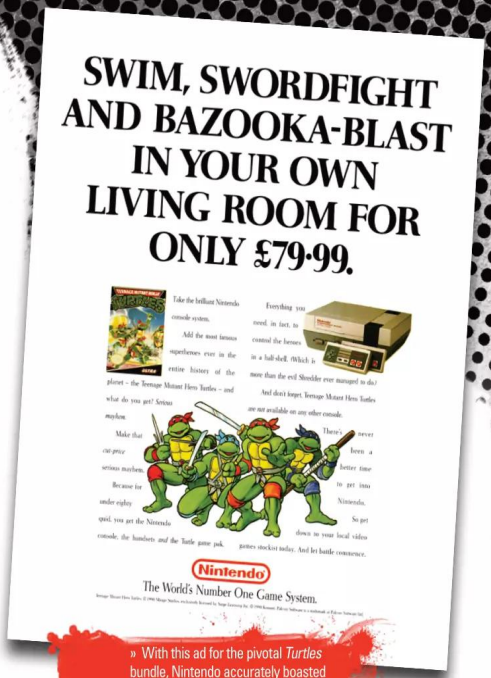
» Nintendo's early advertising emphasised the family-friendly image it has been associated with for decades now.

SEGA
EUROPES No.1 GAMES CONSOLE
Masses of power, arcade quality graphics, and over 100 great titles available
Sega consoles are the worlds best for value, excitement and fun.
8 BIT VERSIONS
16 BIT VERSIONS
MASTER SYSTEM £79.99
MASTER SYSTEM PLUS £99.99
OVER 100 GAMES AVAILABLE STARTING AT £9.99
MEGA DRIVE £189.99
Includes free game Altered Beast.
Arcade quality graphics and enough 16 bit power to test the best and span out the rest.
POWER BASE CONVERTER £29.99
Enables you to play over 100 classic master system games
SEGA
"DO ME A FAVOUR... PLUG ME INTO A SEGA"

» Sega claimed to be the most popular console brand in Europe, which was true.



» Early Genesis ads in America focused on the system's technological superiority over Nintendo's 8-bit console.



» With this ad for the pivotal *Turtles* bundle, Nintendo accurately boasted about its global supremacy.

▶ in several more US test markets during 1986, and eventually went fully national that same year. With popular games including *Super Mario Bros*, *The Legend Of Zelda* and *Metroid*, nothing seemed to be able to slow the system down. "We did this commercial where we pulled back from a group of kids chanting 'Mario, Mario' and as you pulled back to the view from space, they're collected in a group that forms Mario's face," says Don Coyner, who joined Nintendo during its late Eighties ascendancy. "That was a fun shoot. Technology has changed so much, that was a new technique – to be able to clone kids. There were only maybe a hundred kids or something, so we had to turn them into thousands." That *Super Mario Bros 3* advert was a fitting visual metaphor for Nintendo's position in the console marketplace, as it dominated both the USA and Japan.

When Nintendo was building its juggernaut, Sega didn't even have a consumer division in North America. Seeing Nintendo's success inspired Sega to localise its own product, and by March 1986 it had decided to adapt its Mark III console for the American market. In the August 1989 issue of *Computer Entertainer*, Sega's product manager Steve Hanawa described having just three months to prepare for a debut at the summer CES in Chicago, and then another three to be ready for launch in September 1986. Scarcely a year later the company signed a distribution deal with Tonka, a major toy company. Though this deal has frequently been criticised due to Tonka's perceived difficulties in understanding the videogames market, it was a necessity – Sega was a tiny outfit struggling to establish a foothold. When *CVG* interviewed Bruce Lowry, the head of Nintendo's UK operation NESI, in April 1988, he claimed, "Last year 3.2 million Nintendo units were sold in the US and Sega sold less than 10% of that."

Fortunately for Sega, it had a much smoother ride in the European market, where consoles were a minority interest here, due to the domination of various 8-bit home computers. Neither console manufacturer had a European office, and it was Mastertronic that spotted the opportunity to become Sega's UK distributor. That, however, required major investment from Richard Branson's Virgin Group. "We at that point weren't thinking about Sega and videogames, we were thinking about budget software," says Nick Alexander, who had founded Virgin Games in 1982. "From Mastertronic's point of view, they wanted to raise some money to pay for their first shipments of Sega products for Christmas 1987, and Sega would only supply to their overseas distributors with a letter of credit." The deal started off disastrously. "Sega delivered all of their Christmas product to European distributors on Boxing Day, which created a huge problem because they'd paid for all of this stuff, and then the retailers had cancelled their orders and they couldn't sell any," says Nick. "I went to CES in January 1988, and Nintendo had had their first very good Christmas in the US, and at that point I realised that the videogames part of the business might be quite interesting to us after all," he adds with a laugh. "Mastertronic was actually really struggling for cash, having had all this money sucked out of it by Sega. Sega, understanding that we might acquire the rest of Mastertronic, said that if we were to do so they would also give us their distribution in France and in Germany, where they had other reluctant or unable distributors." The deal was done, and Nick became CEO of Virgin Mastertronic.

The team at Virgin Mastertronic felt that Sega's Japanese approach wasn't appropriate for the UK, and created its own branding. "They were a very good company at writing games – they weren't particularly a marketing company. So their marketing strategy had followed Nintendo's, being kids playing with mum and dad and aren't we all happy families," Nick recalls. "As Virgin, when we started marketing the product, we went, 'Actually, that's not what people want.' Teenagers want to be rebellious, this needs to be edgy. That's just a much better message for anyone who's over about ten years old, so that's how we went ahead and it worked very well." Virgin's Sega branding was colourful and engaging, built around the, 'Do me a favour, plug me into a Sega,' catchphrase, and following that rocky start the company managed

It's not even close. The massive Sega™ Genesis™ library is an insane line-up of more than 150 titles. Compared to…well, you get the picture. But we're not just talking numbers here. Genesis is going off with unreal new games like Sonic the Hedgehog,™ Spider-Man,® Toejam and Earl,™ Golden Axe II™ and Joe Montana II Sports Talk Football.™ Any one of these would be enough to blister your thumbs for weeks. So for the best selection of arcade games, action/adventure, role playing, sports, you name it, check out the Genesis library. Nothing else stacks up.
SEGA GENESIS
It's a whole lot more.
The other guys just don't stack up.
CIRCLE #107 ON READER

» Once the SNES arrived, Sega continued to exploit its early market arrival, this time highlighting its larger software library.

to create a European Sega customer base. It wasn't particularly large, but it was active and the Master System was respectably represented in the magazines that would cover it.

Nintendo's start in Europe was considerably less successful. According to Mike Hayes, who was initially tasked with relaunching the NES, the choice of a non-gaming company as distributor was to blame. "We picked up Nintendo in 1989 when we were at San Serif – we'd made a lot of money with *Trivial Pursuit* and *Pictionary*. It was being looked after by NESI, which was being run by Ron Judy, and Nintendo in the UK and Ireland had been a flop, because it had been distributed through Mattel and it was treated very much as a toy," says Mike. "At that point, Nintendo was virtually a nonentity and the Master System and Atari were dominating. In fact, anecdotally, the main customer for Nintendo at that time was Boots, the chemist. When we picked it up, we were selling through something like 8,000 units a month." While the commonly told history is that the Master System was more popular than the NES in this region, this wasn't true for the entire generation. "The market shares were heavily in Sega's favour, so one of the things we did was we worked with Konami, and we bundled the 8-bit with the *Teenage Mutant Hero Turtles* product and called it the 'Mutant Machine'," says Mike. "It was that, really. That turned the fortunes around because sales went up to 200,000 from 8,000 and we managed to significantly claw market share back from the Master System.

BUT WHAT ABOUT JAPAN?

WHY THE CONSOLE WAR NEVER GOT STARTED IN THE HOMELAND OF SEGA AND NINTENDO

On paper, Nintendo and Sega should have been a classic Japanese rivalry. Much could be made of a battle between Nintendo, the established traditionalist company based in the ancient capital Kyoto, and Sega, the Tokyo-based upstart founded by American serviceman. But the truth is that there was never much in the way of real competition between Sega and Nintendo in the Japanese market – at least, not during the cartridge era.

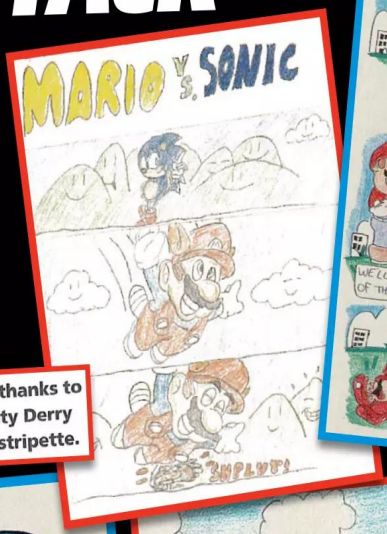
Both companies launched their first cartridge-based home consoles in July of 1983, and by the end of 1984 Nintendo's Famicom had decisively bested Sega's technologically inferior SG-1000. The revised Mark III, which was the basis of the western Master System, didn't help Sega to gain significant ground when it launched in 1985. NEC's PC Engine launched in 1987 and pushed Sega into third place, a situation that wasn't changed by the launch of the Mega Drive in 1988. By the time the Super Famicom arrived in 1990, the concept of Sega as legitimate threat to Nintendo's domination of the Japanese market would have been present in only the most deluded of fanboy minds.

This wasn't helped by the fact that *Sonic* was far less successful in Japan than elsewhere, despite Sega's best efforts. While *Sonic* was supported with all sorts of arcade spin-offs, licensed toys, a manga series and even a promotional campaign with the enormously popular pop group Dreams Come True, the Japanese public never embraced him in the same way western audiences did. To illustrate the point, in April 1993, *Sega Force*'s Japanese reporter Norton Kai explained that a £6.5 million advertising campaign for *Sonic 2* had delivered an official figure of 400,000 sales – far below Sega's target of a million.

It would take another generation for the two companies to reach parity in Japan. Sega experienced its greatest Japanese success with the Saturn, fuelled by the *Virtua Fighter* craze, while the loss of key developers and a lack of RPGs proved ruinous to the N64's chances in Japan. Of course, by that point both of them were fighting over second place, with both consoles way behind Sony's PlayStation.

ART ATTACK

Though the console war's attack ads were most prominent on the other side of the Atlantic, the battle was brought to life in vivid detail on the letters pages of the UK's games magazines. Even as early as 1991, well before the SNES officially arrived on these shores, you could find art of Sega and Nintendo heroes hitting, shooting and generally maiming one another – with the focus naturally being on figureheads Sonic and Mario. Here are some of the contributions received by Sega Power *and* Total! *back in the early Nineties...*



Way to go Mario! And thanks to Liam Donaghy of County Derry for this amusing little stripette.

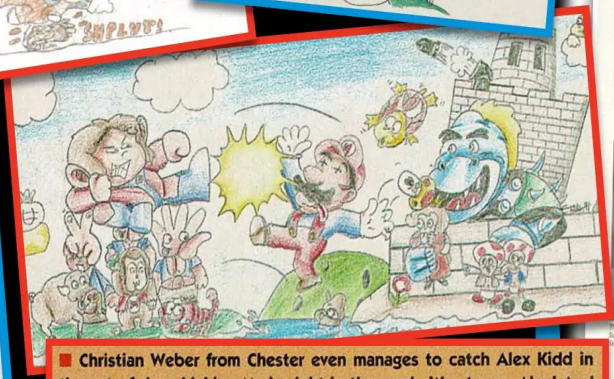
I NEED TO LOSE SOME WEIGHT
YOU'RE RIGHT ABOUT THAT YOU FAT SLOB!
Shnob!
HI YA!
WE'LL NEED TO GET RID OF THIS FLAB
HA HA, WHO NEEDS DIET

16 year old Rob Parry from Southport has been at it again. Here's his latest rib-tickler. Keep 'em coming, Rob

» Nintendo's print ads rarely focused heavily on Mario, and tended to be less colourful and engaging.

SUPER STARTERS FROM NINTENDO
CONTROL DECK
NES VERSION
SUPER MARIO 3
The new NES Sets from Nintendo are the ace way into the hottest gameplaying action around.
You've got the Challenge Set, complete with the award winning Super Mario Bros. 3. Or you can go for the double fun of the Promotion Set, with the original Mario Bros. and smash hit Solar Jetman.
And don't forget, there are loads of other NES titles to try, with more coming out all the time.
£79.99
The Challenge Set with Super Mario Bros. 3. £79.99.
CONTROL DECK
NES VERSION
SOLAR JETMAN
MARIO BROS.
The Promotion Set with Super Mario Bros. and Solar Jetman. £79.99.
FOR MORE INFORMATION CALL THE NINTENDO HOTLINE ☎ 0703 652222

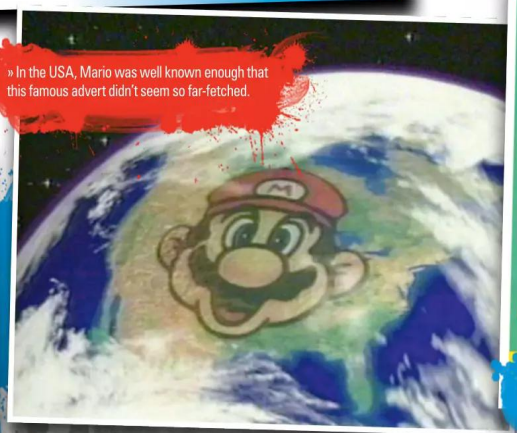
Er, Robbie Dickinson (from somewhere), you're a very sick man. Keep it up! Ooh, it hurts just to look at it...



Christian Weber from Chester even manages to catch Alex Kidd in the act of drop-kicking Mario right in the mush. Way to go, Alex! And look at all the detail in the background – our Art Ed better watch out!

AGED BEEF

When you look at the state of the PlayStation 4 vs Xbox One discourse today, it's easy to wonder if we were always like this. Thanks to the magic of ancient Usenet discussions, we can tell you that console wars never change. Can you tell the vintage videogame venom from today's troublesome tweets?



» In the USA, Mario was well known enough that this famous advert didn't seem so far-fetched.

» Sega countered Turtle Power by heavily promoting its own mascot Sonic The Hedgehog, which paid dividends.

[1] *"Just face it: the _____ beats out [competing console] in the RPG department and that's why [competitor] forced me to buy a _____."* ***PS4 or SNES?***

[2] *This has nothing to do with why _____ sucks. They've been in the game for years and haven't provided one single solitary positive mark on the industry besides [Sonic/Halo].* ***Sega or Microsoft?***

[3] *Here's a compromise. Give _____ the censored version since they're all about that censorship anyway and give [competitor] the uncensored version. Everybody wins.* ***Sony or Nintendo?***

[4] *I chose a _____ over a [competitor] simply because it had titles available that I absolutely wanted to play. I couldn't care less if the [competitor] has a technical edge over the _____, the _____ still looks and sounds pretty good.* ***Mega Drive or Xbox One?***

[5] *I totally disagree with the _____ crap. [Manufacturer] sucks and no game made for both [competing console] and _____ is better on _____.* ***Genesis or Xbox One?***

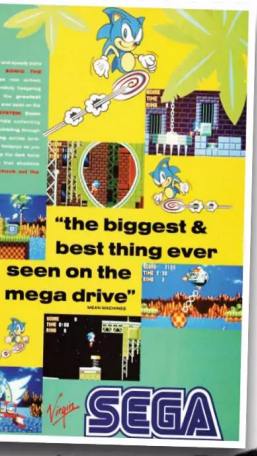
Around 1990-91, we were well into the 60% market share piece. But I think the true battle began when they launched the Mega Drive."

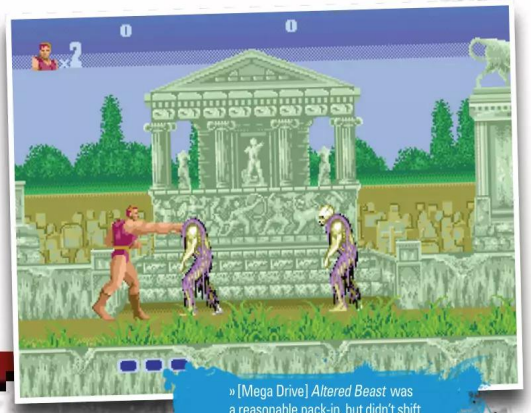
Indeed, this was the hardest fought battle – and in the beginning, Sega couldn't even be assured of a distant second place when it started in North America in late 1989. The electronics giant NEC was launching the TurboGrafx-16, a rebranded and redesigned PC Engine, within weeks of Sega releasing the Mega Drive, now renamed to the Genesis. But NEC's $10 million marketing push failed quickly and spectacularly, to the point that NEC abandoned its planned European launch. Sega quickly aimed its American marketing message towards trying to capture market share from Nintendo, and it launched the famous 'Genesis Does What Nintendon't' campaign that highlighted the system's graphical capabilities compared to those of the NES, as well as drawing attention to its arcade conversions and celebrity endorsed sports games. Taking on Nintendo in such a direct way was a bold move for an underdog competitor, but despite an improvement of sales compared to the Master System, progress was slow over the first year. "Sega Of America was a disappointment to Sega Of Japan, to Hayao Nakayama," says Tom Kalinske. "He thought they should have been able to sell a million Genesis units, and they had not come close to that number." Tom was hired as the new CEO in late 1990. At the same time, the Mega Drive was just launching into Europe, where Sega was looking to consolidate its progress and take a more direct role. "We added Spain in 1990 because we'd done a jolly good job, and then in 1991 we sold ourselves effectively to Sega," says Nick. "We split what was Virgin Games into two bits – Virgin retained the publishing bit, which became Virgin Interactive Entertainment, and I went off to run the marketing, sales and distribution bit, which became Sega Europe in summer 1991."

Tom had previously encountered Nintendo prior to joining Sega, as CEO of Matchbox Toys. "At the time, we wanted to do a Matchbox Nintendo game," he recalls. "So I had to deal with Howard Lincoln and the Nintendo guys way back then." One of Nintendo's main innovations concerned the way it dealt with third-party developers. NES developers were required to sign a licensing agreement on Nintendo's very restrictive terms, including content approval processes, with a lockout chip in place to thwart those who refused. "I saw how you had to meet certain quality standards, they reviewed the gameplay. They were tough, they were really hard to please. So I had that opinion of Nintendo – first of all, congrats on rebuilding the videogames business, but gee, do you treat your third parties terribly!" This practice had ensured the NES wasn't killed by a glut of poor software, but it was a huge burden for third-party publishers. Companies had to buy all their cartridges from Nintendo, pay for them in full up-front and couldn't return them. Nintendo limited publishers to five game releases per year, and those games had to remain exclusive for two years – meaning that NES developers typically didn't work on the Master System.

With the NES selling so well, many companies accepted these terms in order to get on the gravy train. Others were dissatisfied with the situation, most notably Electronic Arts, which saw the new generation as an opportunity to back a rival platform. By proving that it had reverse-engineered the Mega Drive and could release unlicensed games if it chose to, it was able to negotiate concessions from Sega that would have been unthinkable from Nintendo. The key one, later granted to other companies including Konami, Acclaim and Accolade, was the ability to manufacture its own cartridges, allowing EA to manage its own costs and order quantities. In return, EA provided strong support with plenty of popular sports games as well as flight simulators and more. Sega also set up American development studios to provide games suited to local tastes. Sega's 16-bit software supply would be much healthier than what it could provide for the Master System.

In the summer of 1991 the American launch of the SNES was imminent, and Sega had cause to be concerned as it would lose its technological superiority. Nintendo's machine could display more colours, and *F-Zero* showed off playfield scaling and rotation that Sega's machine couldn't do. Then there was *Super Mario World*, the best game in an already beloved series. But at the perfect time, Sega's trump card arrived – *Sonic The Hedgehog*. While it didn't have the longevity of *Super Mario World*, the flagship SNES platformer, it was incredible to behold thanks to its detailed graphics and amazing speed. Sega wasted no time in drawing comparisons between the two games, and embarked on a tour of American shopping malls, allowing players to try both games and make their own minds up, while TV ads featured a salesman desperately trying to flog the SNES to a gamer who was interested in the faster game on the cheaper console. You might reasonably assume this was risky, but that's not how Tom sees it. "We had done research at Sega Of America, and in our research we knew that teens preferred *Sonic* over *Mario* when they had a chance to play them side by side, so we knew the mall tour would work," he explains. "We knew that the competitive advertising would work, because it would at





» [Mega Drive] *Altered Beast* was a reasonable pack-in, but didn't shift hardware in the numbers Japan wanted.

[6] *If _____ fans were on the Titanic, I wonder how many of them would be insisting that there was nothing wrong with the boat?* ***Sony or Nintendo?***

[7] *When I think of a _____ player I think of someone headstrong, cool, not afraid to go against social and cultural norms, someone who likes sports and probably has no probs hooking up.* ***Genesis or Xbox One?***

[8] *_____ has absolutely won a lot, problem is idiots who think units sold is the only factor. Did [competitor] sell more? Yes, but [manufacturer] made more _____.* ***Genesis or Xbox One?***

[9] *Overrated? I dunno if I'd ever use that word to describe a [competitor]! I don't think they're popular enough to be overrated. Probably the most hated system out there to be honest. They're not bad if you don't care about exclusives, I played mine a lot! But _____ does have better games.* ***PS4 or SNES?***

[10] *I don't want to offend anyone, but I'm beginning to think that _____ players are mostly prepubescent boys with too much time on their hands.* ***PlayStation or Nintendo?***

[ANSWERS] *1: SNES, 2: Microsoft, 3: Sony, 4: Mega Drive, 5: Genesis, 6: Nintendo, 7: Xbox One, 8: Xbox One, 9: PS4, 10: Nintendo*

» Sega ran anti-SNES adverts in British magazines, including Nintendo titles like *Total!* as well as multiformat publications.

least jolt the Nintendo user to give us a try. We spent millions – I don't want to underestimate the amount we spent, I don't remember the exact number – but it worked. Sonic became more popular than Mickey Mouse back in those days, certainly more popular for a while than Mario. It was really a well-researched and well-thought-out campaign, and that was led largely by Al Nilsen." The game drove Mega Drive sales as a pack-in title, despite the Japanese office's concerns about giving away the system's best game, and the success of that campaign fed into the creation of further confrontational advertising.

Nintendo's decision was that for the US market, the best response was no response. "Sega was doing a really good job of repositioning Nintendo as the kid's machine, your little brother's machine, and they were having some success at that," says Don. "Nintendo was pretty focused, Mr [Minoru] Arakawa who ran the company was pretty intent on, 'Don't react to what these guys are doing, just stay completely focused on what we're doing.' But Sega was very effective, and Sonic The Hedgehog as a character was very effective – the way they positioned him as cool, hip, a little bit irreverent, was kind of repositioning us." One subsequent TV spot showed teenagers talking about how the Genesis was cheaper and had more games than the SNES, with one describing anyone not playing Sega's console as a "giant loser", while another showed a TV playing *Sonic 2* attached to a dragster, compared to an old banger with *Super Mario Kart* hooked up. "They were very aggressive coming at us head to head. I would say for the most part, we didn't respond to any of it in particular," says Don.

In the UK, where Nintendo was behind, it was a slightly different story. Though TV advertising laws prohibited direct attack ads of the kind seen in the USA, Nintendo did briefly take direct shots at Sega in print campaigns – most notably buying the centre pages of the first issue of *Mean Machines Sega* to advertise *Street Fighter II*, then a highly coveted exclusive. But while the marketing team wanted to make changes to Nintendo's presentation, it was largely denied the opportunity to do so. "There was a big difference between the way Nintendo and Sega were run. [At] Nintendo, we reported in to Mr [Minoru] Arakawa in Seattle, and Mr [Hiroshi] Yamauchi used to approve our TV scripts – the control was phenomenal," says Mike. "The Sega style in the UK was quite anarchic and quite out there, and suited the British audience, whereas Nintendo was 'boing' and 'bouncy' so we always felt we were being outgunned – not outclassed, but outgunned – by the crazy Sega guys, and we were definitely hampered and hamstrung by the pretty dull rules that Nintendo would lay down. We couldn't do what we wanted to do. In fact, a multimillion pound TV campaign that I'd worked on very hard was cancelled, which is why we switched to the Rik Mayall ads at the last minute, because they wouldn't approve it."

One peculiarity of Nintendo's approach in both regions was its tendency to preach to the converted. "The one thing that Nintendo was good at, and still is very good at, was harnessing its core fanbase. We had Club Nintendo, and we had a huge operation just dealing with customers and sending out monthly magazines," says Mike. "Interestingly of course, that also played to Nintendo's disadvantage, because it wouldn't engage with the media as much as Sega would do. In fact, we launched the *Official Nintendo Magazine* – I can't remember, but it was only in

» Initially, Nintendo didn't respond in the US, preferring instead to evolve its existing brand messaging.

1992 or 1993. Club Nintendo was great for your fanbase, but didn't reach out to the wider gaming audience – but once we did connect, it was a very good relationship that we had." Don remembers things being similar in America. "We did a bit of print, although Nintendo was not a big advertiser in all the gaming magazines – we had *Nintendo Power* and kind of focused on that, and didn't want to give other game magazines a bunch of money."

Meanwhile, the greater autonomy afforded to Sega's international branches allowed them to really push the brand into new areas, particularly when it came to older audiences. "We did a lot of things people weren't aware of," says Tom. "On every United States college campus, we had a 'Sega person' who we gave hardware to, and sent them software regularly, and asked them to wander around the male dormitories and plug it in to play with whoever was there to watch and get involved with it. We were one of the first companies to sponsor MTV in the United States, and obviously that was for teen and older audiences as well."

In the UK, Sega's anarchic Pirate TV advertising campaign turned heads, particularly as the company booked out entire commercial breaks for them, and advertising with *Viz* brought about some risqué campaigns that have since achieved infamy. Sega Europe also pushed into mainstream sports, with its branding prominently visible at Premier League football stadiums and Formula 1 races. "We sponsored the European Grand Prix, which became the Sega Europe Grand Prix, and I got to give Ayrton Senna his prize on the podium," says Nick. "That certainly is a personal highlight – I would rather have been giving it to Damon Hill, but it was quite something to be up there!"

But although Nick agrees that Sega had more autonomy, it was hardly an easy ride. "We had fairly major rows with Sega Japan, and they weren't at all convinced by what we were doing," he remembers. Though he and his staff were now employed by Sega, the culture was still that inherited from the Virgin days. "When we were just the distributor it was up to us what we did. But when we became a wholly owned subsidiary, they started wanting to try to influence us more, but actually we fought hard to keep our independence and they respected the results that we were achieving."

Tom had a very similar experience. "Nick and I used to joke about this," he says, remembering his own battles with head office. "We both were very aggressive in our marketing against Nintendo, and of course Sega Japan was not, and Sega Japan did not agree with that strategy. We were very aggressive in our advertising messages, our promotions, our pricing – we cut our prices several times – and Sega Japan would always say back to us, 'Why don't you do things the way we're doing them here in Japan?

HEAD TO HEAD

How did the Mega Drive and SNES fare against each other in representing some of the biggest multiplatform games and licensed properties of their generation?

SNES

STREET FIGHTER II

■ Owners of both consoles could be satisfied that they had great conversions of the hottest arcade game of the era, as Capcom did a fantastic job with both. Nintendo's version just clinches it, thanks to better colour and clearer voices, as well as a standard pad that actually has six buttons.

NBA JAM

■ No matter which version of this classic arcade sports game you play, you'll enjoy excellent visuals and fast, responsive gameplay. However, the Mega Drive version dunks on the SNES iteration as the latter only features menu music, with no in-game tunes – a truly baffling exclusion, really.

MORTAL KOMBAT

■ The SNES should walk this, thanks to superior graphics and the Mega Drive version's lack of six-button support. But the gore and fatalities are very much the point of *Mortal Kombat*, and Nintendo's censorship policies really ripped the spine out of this brutal brawler.

FIFA INTERNATIONAL SOCCER

■ EA's sports games were generally much better regarded on the Mega Drive than on the SNES, and the debut of this enduring franchise is no exception. While the two games are presented well, the Mega Drive version feels more responsive and enjoyable.

T2: THE ARCADE GAME

■ Both versions are amongst the very few reasons to bother with their respective systems' lightguns, but the SNES has a clear edge when it comes to representing the original. The Mega Drive version's soundtrack is good, but the SNES game is way more attractive and authentic.

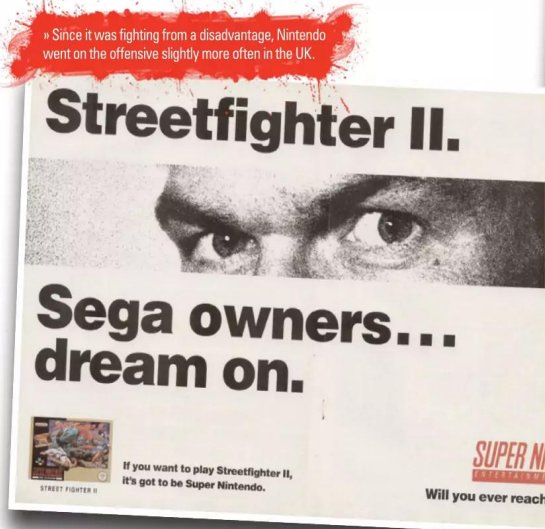
MEGA DRIVE

» [SNES] Sega could no longer boast a power advantage when faced with Mode 7 games like *F-Zero*.

▶ Why don't you use our TV commercials and dub English over them?'" It was a suggestion that failed to convince either man, as Nick recalls. "I hope I was polite, but I tried to put across that perhaps they might do better if they used the European ads in Japan, as they only had a 14% market share there!"

While everyone had their frustrations with their Japanese head offices, they enjoyed causing mild trouble for each other. "There were comparisons, but the rivalry was always friendly. We launched the Rik Mayall TV commercials, we did this in The Ark in Hammersmith, and Sega brought along spotlight vans and shone Sega logos on the side of it – it was that kind of stuff," says Mike, who also remembers how both parties were keen to flaunt their successes. "When we were at the marketing awards, this was in 1992 and Nick had his people there – they won a top award for either the Mega Drive or the advertising. Nick come over to me, because we had a table, cocky as you like and said, 'Oh don't worry, you'll win one of these one day,' and I said, 'We did, last year with the Game Boy!'" Similar shenanigans went on in America. "At CES, we heard that Nintendo was dropping the price of their hardware, and it appeared it was going to be announced the next morning," says Tom. "Our team stayed up all night and went to a Kinko's or some kind of printing shop and had new price lists printed, new PR messages printed, and we even did fake newspapers with the headline 'Sega Genesis drops price to…' whatever it was. We put them under doors, in the hotel, of all the buyers at CES. Everybody got up the next morning and thought that we had cut price first, and then Nintendo had to follow us."

» Since it was fighting from a disadvantage, Nintendo went on the offensive slightly more often in the UK.



But sometimes, Sega's willingness to push the boundaries caused it trouble. While the Mega-CD gave developers an early taste of the next generation's dominant storage format, the hardware's high price and weak games damaged consumer trust. The company was also more tolerant of violent imagery than its rival. "Allowing the real blood in *Mortal Kombat*, that clearly sent a message that we were for older teens and college students," says Tom. "That was really a stab at them where the audience suddenly realised, 'Geez, Nintendo really is for little kids.'" But that wasn't how the press or politicians saw it – to them, *all* videogames were primarily for younger kids.

TOY STORY

■ Both versions of this Pixar tie-in offer a good time, with detailed prerendered 3D graphics and a good variety of things to do. However, for some reason the SNES version omits the technically impressive racing level Day-Toy-Na, making the Mega Drive version the one to play.

ALADDIN

■ Some swear by the amazing animation and sword-swinging combat of Virgin's Mega Drive game, while others think that Capcom's SNES version offers superior control and level design – particularly during the magic carpet ride. We narrowly prefer the Mega Drive version.

ALIEN 3

■ While the film was considered a duffer when it debuted, these platform shooters are both pretty good. The two versions are completely different. The SNES game is a bit slower but more fun, as it doesn't suffer from the camera positioning problems that mar the Mega Drive game.

JURASSIC PARK

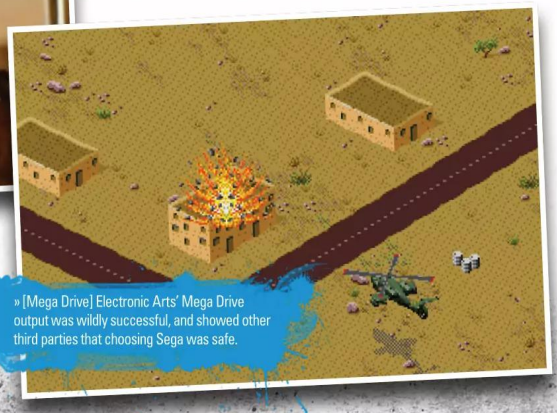
■ These were two different games entirely, and while the Mega Drive version lets you be a dinosaur, BlueSky Software's interpretation is a relatively unambitious 2D platformer. Ocean's SNES game mixes top-down sequences with first-person dinosaur encounters, and is more exciting for it.

ADVENTURES OF BATMAN & ROBIN

■ Both of these games look amazing – Konami's SNES version looks like a cartoon come to life, whereas the Mega Drive version uses every clever coding trick in the book. Neither version is a pushover, but the SNES version isn't quite as difficult as its rival.

» [Mega Drive] *Sonic 2*'s internationally coordinated launch was a news event, and Nick's "moment of greatest triumph".

» Steven O'Donnell frequently fronted Sega's UK TV campaigns in the early Nineties, with Rik Mayall becoming his Nintendo counterpart.



» [Mega Drive] Electronic Arts' Mega Drive output was wildly successful, and showed other third parties that choosing Sega was safe.

In America, Sega took the brunt of the criticism in 1993's congressional hearings on videogame violence, with its version of *Mortal Kombat* as well as the notorious Mega-CD game *Night Trap* singled out for scrutiny. They also drew the attention of the UK press, despite *Night Trap*'s legally enforceable BBFC 15 rating, and this led to a memorable moment for Nick. "We were actually interviewing PR agencies the day that the [*Daily*] *Mail* ran their 'Sega Sickener' story, and one of the agencies came in and threw the *Daily Mail* on the table and went, 'This is disgusting, how can we possibly work with people like you who do this sort of thing?' And I said to them, 'Have you actually seen the game?'" They hadn't, so Nick decided to show it to them. "The managing director, you could see him go, 'Oh for goodness' sake, what have I done?' when we showed them it all politely, and off they went."

As the generation continued, the two sides eliminated each other's advantages. Though legal pressure had forced Nintendo to drop its mandatory no-compete clause for licensees, it still had leverage. "I know they don't admit this, but they would say to third parties, 'If you publish on Sega Genesis, you're going to have a problem – we're not going to approve games, and we're not going to give you the quantities you want of your cartridges,'" says Tom. "We had to have a lot of hardware in the market before those companies would feel brave enough to go against Nintendo." Sega reached that point, eventually attracting support from major third-party publishers including Konami in 1992, plus Capcom and Ocean in 1993. And while Nintendo's relative conservatism had allowed it to avoid embarrassing incidents, there was an eventual recognition that it needed to counteract some of Sega's moves, starting with the 'Play It Loud' campaign in 1994. "We'd go out and do picture sorts with gamers – 'If Sega was an animal, what would it be?' And it was sort of a leopard or a cheetah, it was something very fast, and Nintendo was things like an elephant – it's big, it's lumbering, it moves slowly, but it's not a leopard," says Don. "We decided to do a campaign that seemed un-Nintendo-like, to try to show a bit of attitude – 'Okay, we're not just about *Kirby's Adventure*, this pink thing that floats around, there's more attitude there,'" he explains. A Nintendo TV ▶

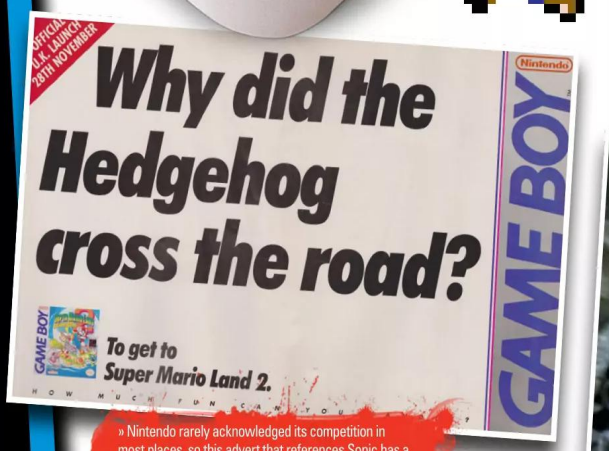
HANDHELD HOSTILITIES

THE CONSOLE WAR WASN'T JUST FOUGHT IN THE HOME – PLAYERS COULD LITERALLY TAKE IT INTO THE PLAYGROUND

The battle between Nintendo and Sega didn't just coincide with the introduction of 16-bit consoles, but also handheld systems. Nintendo launched the Game Boy in 1989, featuring an economical design with a four-shade greyscale screen that made it look considerably less impressive than its initial rival, Atari's full colour Lynx. However, that design made the Game Boy cheaper to buy and thanks to its superior battery life, cheaper to run. Sega jumped into the market in 1990, repurposing its 8-bit Master System console for the job. The Game Gear faced many of the same problems as the Lynx, such as a high price and poor battery life, but its technology wasn't as impressive. However, Sega could at least guarantee a steady supply of software.

"I actually loved the Game Gear, despite our problem of eating up batteries," says Tom. "I loved the product – the colour screen, I thought it was really high quality, and I liked competing against the Game Boy. Actually, in the US there were some periods of time where we – and we were more expensive, obviously – outsold the Game Boy." However, Nintendo was confident. "When the Game Gear came out it was colour, it had a bigger screen. The Game Boy – you needed to shine a light on it if you wanted to play it in the dark," says Don, who recalls management's recognition that it had a market-appropriate offering. "It was like, 'Don't worry about it, we're $89, we have significant battery life and their games aren't as good.'" Of course, the belligerence was still there, and both Don and Tom remember the campaign in which Sega explained how a dog wouldn't care about having a monochrome handheld instead of a colour one, but would also enjoy drinking from a toilet.

As well as having hardware advantages, Nintendo had the *Tetris* phenomenon on its side. Though widely available on other platforms, it is best remembered as the Game Boy's bundled game. Though the Game Gear had some bespoke *Sonic* games, it couldn't match the universal appeal of the addictive puzzler. The exact number of Game Gears sold prior to its 1997 discontinuation is hard to nail down – *Famitsu* claimed about 10.6 million in mid-1996, while Sega's Hideki Sato claimed about 14 million in a 1998 interview. Neither figure is especially flattering next to the 54.76 million Game Boy consoles sold up to March 1997, though.


OFFICIAL U.K. LAUNCH 28TH NOVEMBER
Why did the Hedgehog cross the road?
To get to Super Mario Land 2.
HOW MUCH FUN CAN YOU HAVE?
Nintendo
GAME BOY

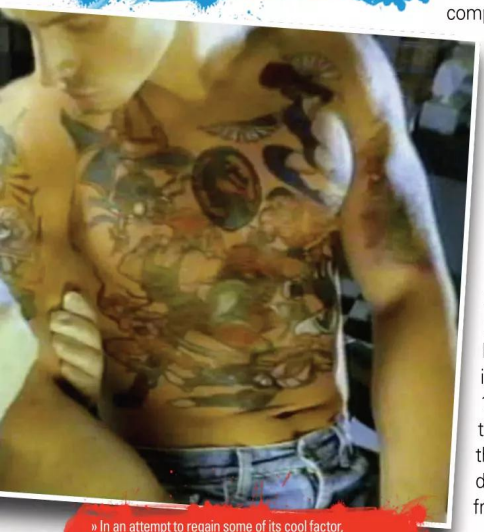
» Nintendo rarely acknowledged its competition in most places, so this advert that references Sonic has a very distinctive UK flavour.

If you were
colorblind
and had an I.Q. less than
twelve
then you wouldn't care which
portable you had.
(Of course you wouldn't care if you drank from the toilet either)
SEGA

» Sega saved its most savage attacks for the handheld battleground, where it had a rougher ride against Nintendo's dominance.

» [SNES] In late 1994, *Donkey Kong Country* on the standard SNES made Sega's decision to launch the 32X look foolish.

» Sega's marketing was often bold – in the case of these Pirate TV ads, booking out entire prime time commercial breaks.



» In an attempt to regain some of its cool factor, Nintendo launched the 'Play It Loud' campaign in 1994.

» Always seeking to be edgier, Sega's UK advertising eventually began to include references to sex and drugs.

spot featuring the Butthole Surfers would have been unthinkable just a couple of years prior, as would an uncensored *Mortal Kombat II* – but the introduction of ratings systems also gave Nintendo the excuse it needed to relax some of its policies, and the key arcade conversion fared much better against the Sega version.

Neither side was able to claim a decisive victory in the 16-bit battle but Sega seemed to be narrowly ahead in these regions. Sega claimed 55% of US 16-bit hardware sales in 1994, and the picture was similar in the UK. "We could never get above the 40% to 45% share with the 16-bit," confirms Mike. "The Super Nintendo was a better machine, there's no doubt about it, but how many times have we seen better technology not perform as well as more appropriate technology?" Yet it was Sega that would ultimately blink first. Having been convinced of the value of arriving to market early, it introduced the 32X upgrade in late 1994 – another disastrous add-on that damaged Sega's brand image, as it was soon dropped following the mid-1995 surprise launch of the Saturn, the true Mega Drive successor. Nintendo delivered Rare's *Donkey Kong Country* that Christmas, and the platformer's prerendered 3D graphics proved that there was life left in 16-bit. The game sold 9 million copies, and Nintendo stuck with the SNES as its primary platform through to 1996 – admittedly, partially due to its delayed Nintendo 64 launch.

Some cynics would have you believe that for all of the sound and fury, the console war was largely inconsequential as the next generation saw both competitors squashed by Sony. You could certainly argue that neither party saw a benefit. Though Nintendo sold more SNES consoles than Sega did Mega Drives on a global basis, it marked the start of a long-term decline in Nintendo's home console business, as the SNES sold over 12 million fewer units than the NES had and the N64 and GameCube would do even worse. Nintendo eventually had to abandon its attempts to stay on the technological cutting edge in order to stop the rot. As for Sega, breaking Nintendo's virtual monopoly in the console market was of little benefit. By the time the company published its final Mega Drive game in the autumn of 1997, the Saturn was already moribund and the Dreamcast was being developed. Less than four years later, that console would be discontinued too, marking Sega's withdrawal from the console hardware market.

However, it would be foolish to ignore the impact that the console war had. The conflict drove interest in gaming as a whole – Sega's sales increased by 350% from 1989 to 1993, and despite losing market share in home consoles, Nintendo's sales increased by 118% over the same time period. This growth saw the UK's console market surpass home computer market revenues in 1992, and while few of the new competitors that were attracted to the console market were successful, one of them clearly learned from the battle. Much of Sony's approach to marketing the PlayStation was an evolution of what Sega had done with the Mega Drive – broadening the age demographic and effectively courting third-party publishers.

As a pop culture moment, the war between Sega and Nintendo still resonates, to the point that it's soon to be dramatised as a TV series based on the *Console Wars* book by Blake J Harris. "It was catching the imagination. Interestingly, now because games are totally mass market, that kind of interest isn't there any more because it's just established, like the music industry and the film industry," opines Mike. "But then, to the outside world and to the *Daily Mail* readers, it was one of these curiosities that kind of caught the attention, so we could play on that hugely." Nick agrees that the era was a pivotal time in gaming history. "Nowadays we're used to the latest videogame releases being on the news and being heralded as huge entertainment products, but *Sonic 2* was the first time in most of Europe that a videogame was outselling major movie releases and the most successful books or music tracks," he recalls. "I think that was a turning point, not just for us but actually for the industry, in normal news media going, 'Blimey, actually this is quite big and this is quite serious business.'"

Indeed, gaming is big business now. Platform holders have to make things easy for publishers, for whom writing two different versions of games for two different formats is long past economically viable, so every console has to act like every other. As globalisation and the internet have reshaped our world, localising your marketing message isn't nearly as important as it used to be. To be blunt, a conflict like the one Sega and Nintendo had in the early Nineties isn't just unlikely to happen again – economic realities have changed the games industry to ensure that it never will. But that's why those of us that lived through it will always treasure that time, and that's what ensures it will live on in legend. ✱

SHADOW DANCER

It's dog-eat-terrorist in this sequel to Sega's incredibly popular 1987 hit Shinobi. Whistle for your faithful hound and ready those shurikens, as it's time to disable a set of deadly bombs scattered throughout the city, and eliminate the nefarious organisation that is placing them

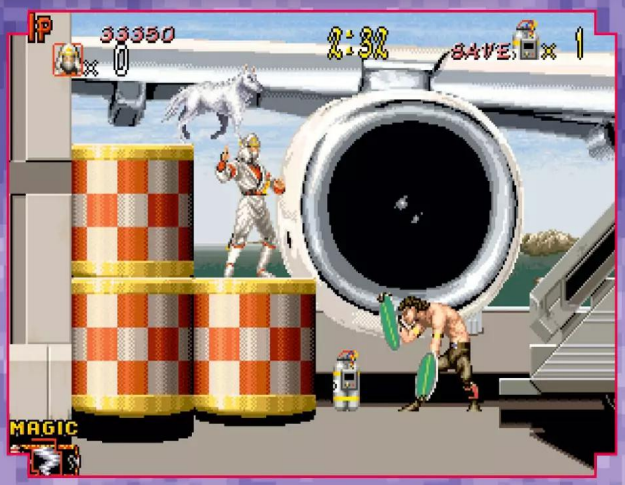
Words by Graeme Mason

The arcades were a brutal battleground back in 1987 as machine after machine begged for the coins from your pocket. Lurking in the corner, bathed in shadows, was Sega's *Shinobi*, and it was the breakout hit of the year, instigating a franchise that continues to enthral fans today. *Shinobi* introduced the world to the masked hero Joe Musashi, legendary ninja and teacher, on his mission to stop the terrorist organisation Zeed. The success of the game ensured multiple appearances on home computers and consoles, plus the inevitable continuation of the series in arcades. Yet while 1989's *Shadow Dancer* is the true sequel to *Shinobi*, the game strangely diverts away from its predecessor in terms of storyline. Starring an unnamed ninja and his pet dog, there's another bunch of terrorists threatening freedom, while it was nameless in the arcades, according to some home versions this organisation was called Asian Dawn.

Someone at Sega, like *Die Hard*'s Hans Gruber, obviously reads *Time* magazine.

The gameplay to *Shadow Dancer* closely follows the template laid down by *Shinobi* two years earlier, itself owing a debt to Namco's spy thriller *Rolling Thunder*. The notably visible star (contrary to his ethereal moniker) strides from the left to the right of the screen, jumping over obstructions and athletically leaping on to the platforms above or below. From every angle the enemy terrorists attack the hero, and there's a huge variety within this terrorist organisation as multicoloured ninjas wield dual swords, and thugs fling knives across the screen or simply run up to the shinobi, razor-sharp blade held aloft. Some unarmed enemies use their fists and feet to batter the player, while others are equipped with shotguns, often lying prone to shoot at your feet, the cads. But that's not all: Looking like a cross between a WWE wrestler and Patrick Swayze, with his long wavy hair and bare chest, another enemy possesses twin ▶

» [Arcade] An old friend pokes its pointy nose out at the airport.



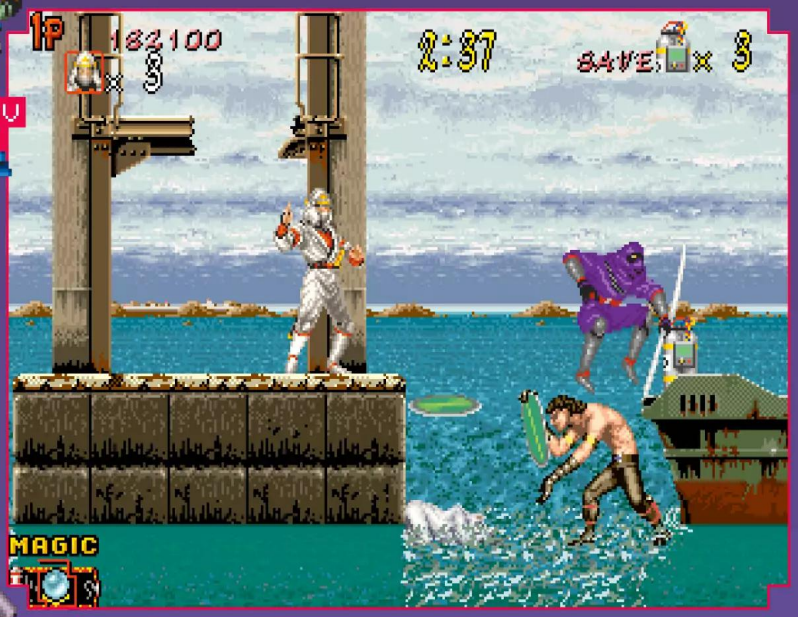
» [Arcade] Watch where you step here – remember that first episode of *Lost*?

green discs which he uses to deflect incoming shurikens and chuck at the shinobi. And by the time you make your way to the enemy's underground base, even estranged crocodiles attack the player, slavering jaws yearning for some nice juicy ninja flesh.

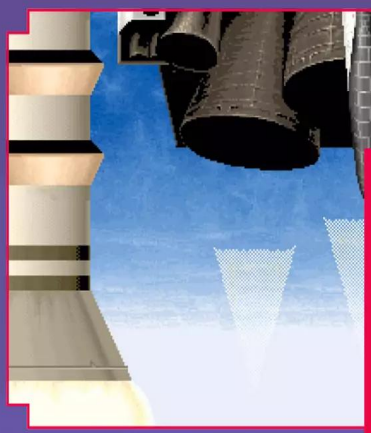
As in *Shinobi*, the star of *Shadow Dancer* retains an infinite supply of shurikens, of which he can hurl in volleys of up to four at a time, and for when enemies get too close for comfort, he efficiently flashes his narrow blade instead. The game's upright cabinet holds a central joystick and three buttons, for jump, attack and magic, with a corresponding set of buttons on the opposite side. Pressing up or down on the joystick and jump causes the ninja to spring to another level, often required to reach certain opponents and objectives. The yellow magic button unleashes the ninja's special attack, wiping out minor henchmen or sapping the power bar of the end-of-level bosses. Sadly it's only available once per section, and best saved for those powerful boss villains. The game itself was developed on Sega's new System 18 board, an improved version of the System 16 board that includes enhanced sound and graphics capabilities.

Yet despite magical powers, a deadly sword and infinite shurikens, this ninja's greatest asset is his loyal pet dog – of indeterminate breed, but looking like a snowy German Shepherd – and a ferocious ally, even in the face of well-armed enemies. Should this furry friend spot a villain, it lets out a sharp bark. The shinobi can now crouch and press fire, sending the dog off to restrain the ruffian in question. Once its jaws are locked and the enemy is duly incapacitated, the player has a limited time to fling a shuriken before the

» [Arcade] Let a ninja get too close to you and this minigame is over.



» [Arcade] This frisbee-wielding baddie has clearly been watching *Hard Ticket To Hawaii*.



» [Arcade] With the enemies vanquished, the space shuttle takes off unhindered.

CONVERSION CAPERS

AMIGA

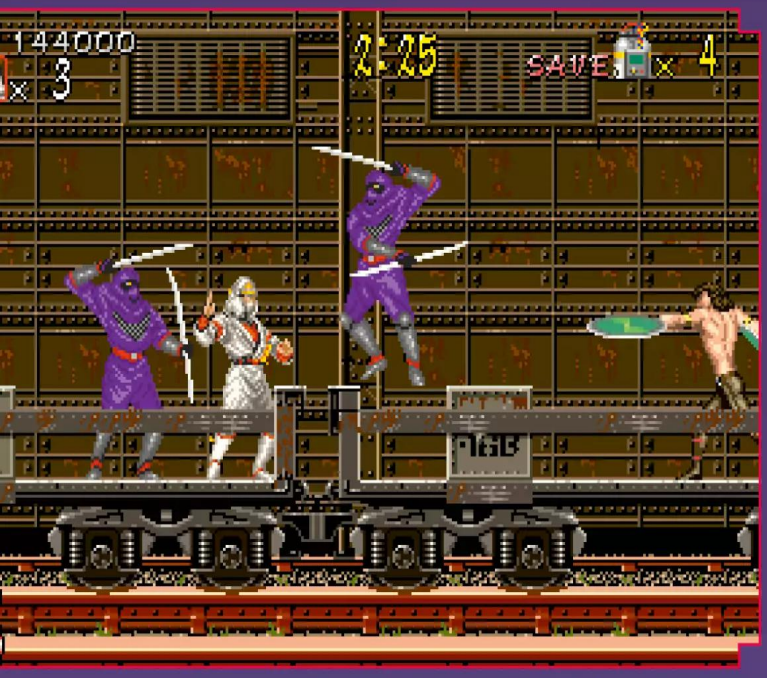
We may have been a bit harsh on US Gold's 16-bit arcade conversions in the past, but it's a reputation it unfortunately often deserves. Credit where it's due, however: this port of *Shadow Dancer* is an excellent conversion, even boasting better music than the arcade original. This was inevitably ported from the Atari ST version, yet improved thanks to its sharper graphics and enhanced audio.

ATARI ST

Like the Amiga port from this base game, this is a decent effort at recreating the Sega arcade game, two years after its original release. There are plenty of big and bold sprites on display and the gameplay is suitably frantic and tough – *very* tough in places. Overall, despite some choppy sound, this is a well-rounded conversion. Curiously, both 16-bit versions lack the cool two-layer scrolling of the original.

COMMODORE 64

While most probably edging the 8-bit home computer versions, the Commodore 64's *Shadow Dancer* moves at a slower pace, and it has some respawning enemy issues that ramp up its frustration factor. Otherwise, it's a decent port, and the first-person shuriken minigames are particularly fast and pleasing.



» [Arcade] Things are heating up here as the shinobi endures second-class train travel.

Q&A DAVE SEMMENS

SHURIKEN

The coder behind the ZX Spectrum and Amstrad ports of Shadow Dancer takes us behind the scenes

How did you come to work on *Shadow Dancer* and who did you work with?

Images Ltd contracted me to do both the ZX Spectrum and Amstrad versions. I was the main programmer and there was an artist, Doug Townsley, and a sound person.

Were you familiar with *Shadow Dancer*?

I had never played or seen the game before taking the contract! I got to play it at the Images offices for the first time when I went down there, and I was also given a VHS video of the entire gameplay. I only actually played through the game once. We never got any code for any game I ever worked on, and after that one play of the game, I only had the video for reference.

It was quite a complex game to squeeze into the ZX Spectrum in particular, and the extra on-screen protagonist couldn't have helped...

One big difficulty was storing enough animations. The human characters were broken down into legs, body and heads so they could be mixed and matched to give some variety. Then we did not get as many animations in as we would have liked for the dog. It was very tricky fitting all the graphics in, but that was standard issue on the Spectrum. The other problem was leaving the dog behind in the level, from my memory that was a right pain to deal with. Controlling the super jump also gave me a few headaches.

It's a very commendable effort at squeezing the arcade game into the Spectrum – were you pleased with the final game and its review scores?

Yes, I think we came up with a very playable version, with all the levels and end bosses covered. We even managed to get some parallax scrolling effects in to add a bit of sparkle.

I would always take quite a bit of notice of reviews as it was a critique on my own work really. It would also help me get future work if the games I worked on scored highly.

AMSTRAD CPC

A port of the Spectrum game, this version adds more colour and sound but at a reduced speed, purging much of the fun from the action. Nevertheless, like its other conversions, Amstrad *Shadow Dancer* at least shows a level of care and skill by its creators, raising it comfortably above many of its US Gold peers.

MASTER SYSTEM

Unlike its Mega Drive counterpart, this Master System game is a 'mere' port of the arcade original, with a few sacrifices to the inferior technology. The biggest difference is the lack of the shinobi's faithful hound on-screen, although it can still be called upon during hectic battles to attack any hard-to-reach enemies.

ZX SPECTRUM

While visually the poorest of all conversions (despite a sharp resolution, it's stoically two-tone as with many Spectrum arcade ports), this is an ambitious attempt to bring the multiplatform game to the Sinclair computer. Predictably, there is little sound and backgrounds are simplified, but it plays briskly and even retains the first-person shuriken minigames.

MEGA DRIVE

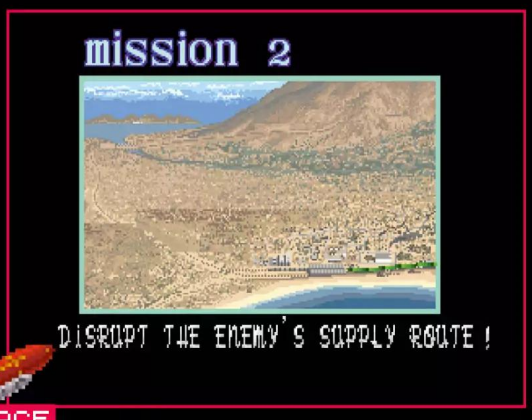
Subtitled *The Secret Of Shinobi*, *Shadow Dancer* is one of a select handful of Mega Drive arcade conversions that are either completely different or add significant extras (much like with *ESWAT* and *Gauntlet IV*) – although it's arguably not even a conversion, considering the difference in levels. With the player taking on the role of either Joe or his son, Hayate – depending on your region – there are new levels, enemies, music and bosses in this excellent Mega Drive sequel to the similarly brilliant *The Revenge Of Shinobi*.

RUNNING THE GAUNTLET

We break down Shadow Dancer's levels

MISSION 1

Terrorists, bombs and an airport are not a great mix, and there's little sign of security here as the bad guys constantly accost the player through departure lounges, the tarmac and eventually the hold of a cargo plane. There are some notable iconic images in the background, including an elegant Concorde, sitting on the runway, ready for futuristic supersonic flight. It's not only a great way to introduce the enemies of the game, but also allows you to discover just how useful your canine companion is.



MISSION 2

It's time to hit the enemy where it hurts and take out their precious supply route! Having escaped the heavily armoured airport, the ninja follows the enemy trail to a nearby junk and train yard. Leaping across trashed Lamborghinis and over steel fences, the pair are set upon by enemies both old and new, before boarding a train and negotiating the many multiple levels of the docks. Fortunately the water's not too deep!

MISSION 3

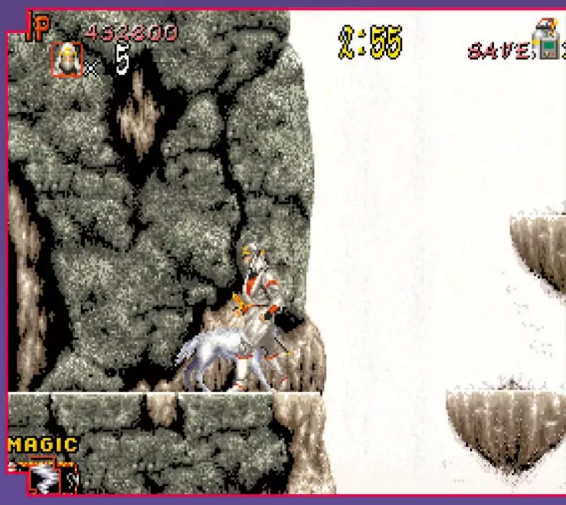
Next it is into the enemy's base itself and here the action really begins to heat up. Your journey will see you venturing across an abandoned factory (where the enemy has bizarrely left more bombs), into the building itself, before descending into the icky brown sewers, complete with giant mutated crocodiles. Tread carefully through these sections and make sure you use your faithful hound to the best of its abilities.

MISSION 4

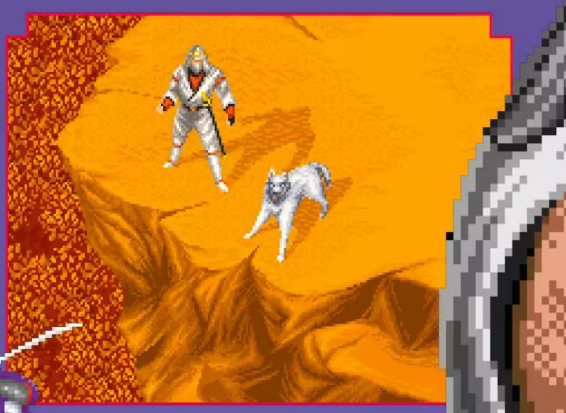
Stalagmites and stalactites pepper the underground tunnels where the ninja and his dog now find themselves as they seek to halt the enemy plan before it's too late. The dank tunnel leads to a cascading waterfall, the Space Shuttle installation before onto the shuttle itself and the final showdown with the terrorist leader. The enemies come thick and fast here so be prepared.

hound is shaken off and shrunk back to a pup, of little use for the rest of the level, or until a bomb is deactivated. Said deactivation also sometimes upgrades the shurikens, adding flame and power to their effect, a handy improvement when faced with enemies that are able to repel the throwing stars or are immune to the dog's attacks. Once all the bombs from a level are collected, the exit to the next scene appears.

***Shadow Dancer* takes place over four different stages, each with either three or four areas within.** Progress is marked between each area with a photo map, complete with a glowing green line marking the route to take. The mission begins in the terminal of an airport; once secured it's out onto the runway with numerous passenger jets providing the striking background. Stage two follows the terrorist supply line across a junk and train yard, before an abandoned factory and crocodile-infested (or are they alligators? We can never tell the difference...) sewer awaits the ninja. Make it through all that and your final destination is the space port, where the evil extremists have some diabolical fate in store for the waiting space shuttle. With only three lives, no energy bar and a high difficulty level, even these short stages will take



» [Arcade] Some of the levels are more than a little evocative of *The Revenge Of Shinobi*.

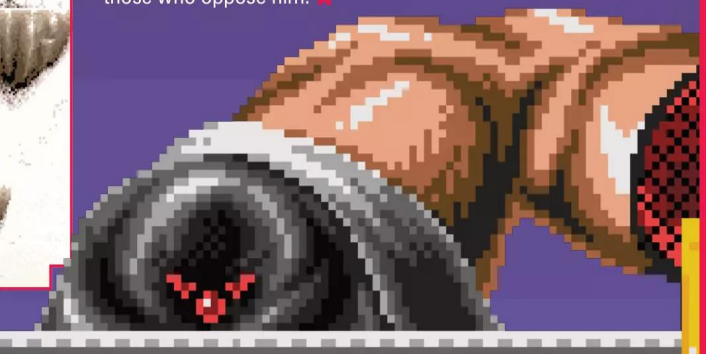


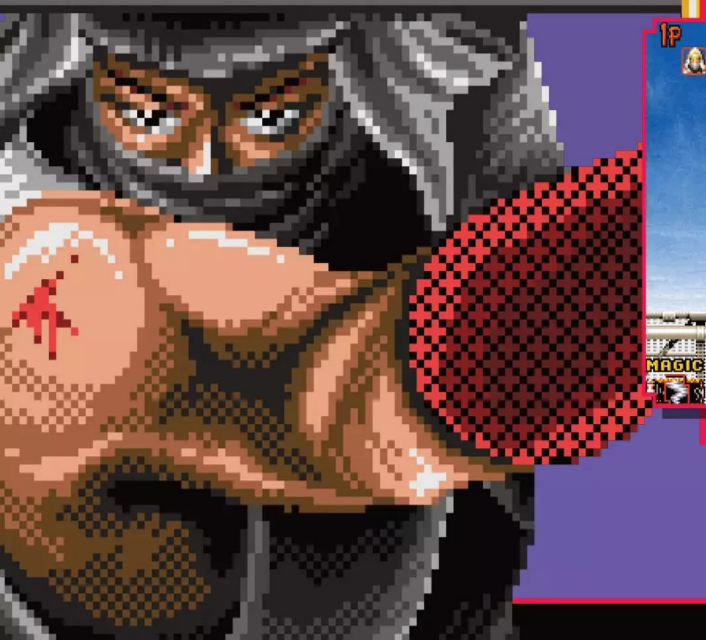
» [Arcade] Mission accomplished! Time to pose for the camera.

» [Arcade] Little ninjas repelled, it's time to take on the final boss.

some practice. Fortunately, the player has the opportunity to gain extra lives with a dramatic and exciting minigame that appears between each section. In a first-person view, the player looks up towards a high tower as enemy ninjas quickly descend level by level. Despatch them all with your shurikens and there's a special bonus life awaiting you; miss just one bad guy and it's a swift kick in the face, and off to the next mission.

As with the first game, *Shadow Dancer* received a healthy array of home ports, most of them credible efforts in recreating the arcade game. The 16-bit versions are the most faithful, with the Mega Drive's version different enough to perhaps even be called a remake. Having already been treated to semi-sequel exclusive, *The Revenge Of Shinobi*, the same year as *Shadow Dancer* hit arcades, the console received *Shadow Dancer: The Secret Of Shinobi* in 1990. While its gameplay mechanics are largely the same, the backdrops to *Secret Of Shinobi* is significantly different from the arcade machine it is supposedly imitating. An extra mission, alternate minigames, hidden bonuses and different enemies all add up to a pleasing supplementary chapter in the story of *Shadow Dancer*, the ninja who doesn't so much as dance in the shadows as parade in broad daylight, bravely fronting up and destroying those who oppose him. ★





BOSS RUSH

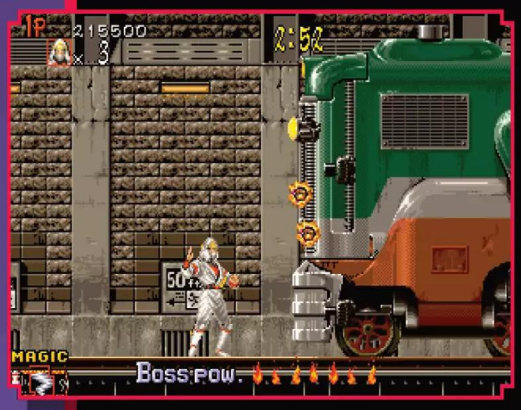
How to overcome Shadow Dancer's end-of-level supervillains

LEVEL 1-3 BOSS

■ Fans of the Mega Drive semi-sequel *The Revenge Of Shinobi* will be familiar with this heavily armoured chap. He's slow, but lobs lethal glowing balls at the brave ninja.

HOW TO BEAT

■ Quite simply, actually, given this first boss only has two types of attack, high and low bouncing balls. They are easily dodged while you let shurikens fly at his vulnerable arms and head.



LEVEL 2-4 BOSS

■ Bosses don't come much sturdier than this, a massive locomotive, charging towards the player while hurling fireballs in their general direction. Maybe British Rail wasn't that bad after all.

HOW TO BEAT

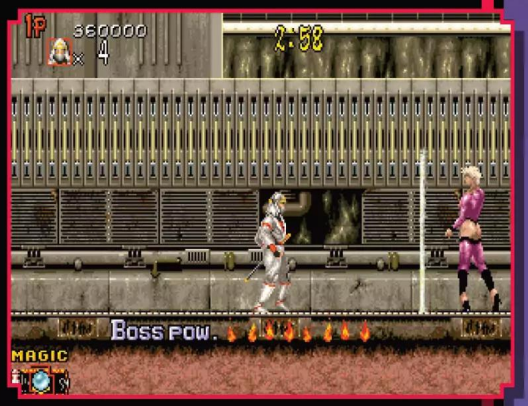
■ This level is quite elongated, so make use of the room to your left to help dodge the train's deadly fire. You need to hit the moving headlight a handful of times, after which it helpfully explodes.

LEVEL 3-4 BOSS

■ This blonde-haired female warrior hurls massive segments of the background at the hero (which circle around and drop down on them) and hides behind a powerful tall shield.

HOW TO BEAT

■ You can get a sneaky hit early if you dare get close to her shield. After that it's time to duck and jump the deadly projectiles, timing your shurikens as her guard drops to throw them.



LEVEL 4-4 FINAL BOSS

■ Surrounded by a multicoloured circle, this final master of the terrorist clan lets loose flying mini-ninjas who must be defeated before you can have a crack at the boss herself.

HOW TO BEAT

■ Stay low and fling shurikens to prevent the little ninjas escaping into the air. The main boss has a long pike which deflects the missiles, but she can be worn down relatively easily when her guard drops. A spare magic boost always comes in handy.

PLAYING WITH SUPER POWER

INSIDE THE SUPER NINTENDO

30 YEARS SINCE IT HIT JAPAN, MANY PLAYERS STILL FEEL THAT THE SUPER NINTENDO IS THE BEST CONSOLE EVER MADE. WE SPEAK TO VETERAN SNES DEVELOPERS TO FIND OUT HOW THE GAMES THAT MADE THIS GREY BOX LEGENDARY WERE SHAPED BY WHAT WAS INSIDE OF IT

WORDS BY NICK THORPE

Videogames hardware production is a fascinating business, and one that has a couple of odd, counterintuitive quirks. The first one is that technological superiority is usually more harmful than it is helpful – if power drove sales, we'd still be talking about the dominance of the Atari Lynx and Xbox. The second is that success is hard to sustain for two generations in a row. All too often, companies have followed up their most popular systems with machines that range from underwhelming to total bombs, such as the Atari 5200, Saturn and Xbox One. As the longest tenured hardware manufacturer in the business, Nintendo has hardly been immune from these truths, with the Nintendo 64 and Wii U serving as ample proof. But it has produced the only machine we can think of that served as an exception to both of those statements at the same time – the Super Nintendo Entertainment System, or Super Famicom as it's known in Japan. But as readers will know, it's far more than just a historical anomaly, and is one of the most highly regarded platforms in the history of videogames, and much of its success can be attributed to Nintendo's hardware design prowess. ▶

MIKE DAILLY

■ During the SNES years, the *Lemmings* co-creator was a programmer working on a variety of formats. Today, he owns the indie developer Ogre Games.

CHRIS WEST

■ Having coded games for Domark and Vivid Image during the SNES days, Chris'd go on to found West Racing with his brother Tony, which is still active today.

JAZ RIGNALL

■ Beginning the SNES era on *CVG*, Jaz would launch the legendary *Mean Machines* before going on to work on SNES games such as *The Jungle Book*.

NICK JONES

■ Starting the SNES era at Probe, Nick would move to the USA to new studio Shiny. He now works on the *NBA 2K* series at Visual Concepts.

TONY WEST

■ Working closely with his twin brother Chris, Tony provided art for games such as *Marko's Magic Football* and *Street Racer*, before the pair started West Racing.

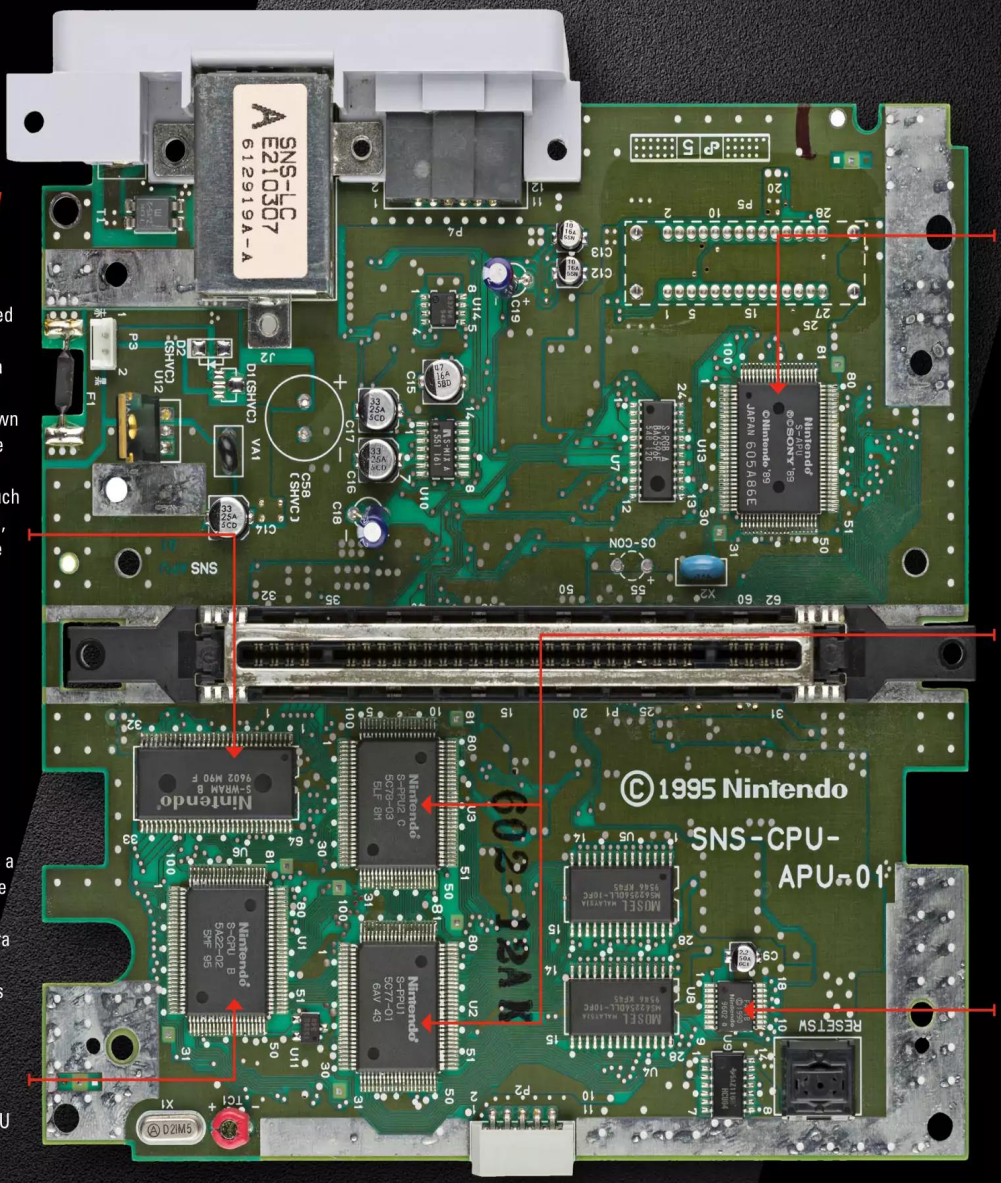
"WE WROTE ABOUT IT WITH A FAIR BIT OF HYPE AT THE TIME, IT MUST BE SAID, WITHOUT REALLY KNOWING THAT MUCH ABOUT IT OTHER THAN THE TECHNICAL SPECIFICATIONS"

JULIAN 'JAZ' RIGNALL

SUPER NINTENDO
ENTERTAINMENT SYSTEM

GET ON BOARD

A GUIDE TO THE CHIPS THAT MAKE UP THE SNES



S-WRAM

This is 128KB of working memory for the system, dedicated to storing program code. Graphical data and sound samples are stored in their own dedicated chips. The original spec for the console included much less RAM, just 32KB, which wouldn't have been enough.

S-CPU

The Ricoh 5A22 is a custom variant of the 16-bit WDC 65C816 CPU, with some extra functions. Existing Nintendo developers would have been comfortable moving to this CPU, as it is a relative of the MOS Technology 6502 CPU family that powered the NES.

S-APU

The audio hardware for the SNES. This was initially packaged as two main chips, the S-SPC and S-DSP, both of which were part of a separate circuit board. They were integrated into the main board in 1993, and combined into the S-APU chip in 1995.

S-PPU 1+2

These two chips together form the custom video hardware of the SNES. To reduce cost and complexity, in 1995 these chips were combined with the CPU into a single chip named S-CPUN A. These 'one-chip' models are noted for their excellent RGB output.

CIC

This is the lockout chip that prevents PAL games from running on NTSC consoles, and vice versa. The only thing preventing a Japanese NTSC game running on an American NTSC console is the shape of the cartridge, leading to very simple region mods.

» [SNES] *ActRaiser* was a fine-looking game, but the real treat was its orchestral audio by Yuzo Koshiro.

» [SNES] No shoot-'em-up had ever looked quite like *Axelay*, with the way its scenery rolls over the horizon.

» [SNES] In *Contra III*, Konami faked a second layer of rotation by using sprites to draw the ground and Mode 7 for the boss.

In the late Eighties, Nintendo was the powerhouse of the videogames business. The Famicom had successfully conquered the Japanese market, and it had successfully exported the technology to the USA, reviving its console business following the crash of 1983. Like any company with a successful product on the market, Nintendo was not particularly keen on abandoning the NES, but the people at the top were aware of new technology on the horizon – mostly because Hudson Soft had initially tried to sell it to Nintendo. Having been turned down, Hudson joined forces with electronics giant NEC to launch the PC Engine in October 1987. The small, powerful machine captivated Japanese players, with over half a million units sold in just its first few months on the market. This coincided with a downturn in domestic Famicom sales, and while Nintendo was still the market leader, it clearly couldn't rest on its laurels. Late in September of 1988, Sega announced its 16-bit Mega Drive, just a month ahead of its October release. If Nintendo didn't show its hand soon, there was a real chance that players would drift to these new machines.

In November 1988, Nintendo invited hundreds of members of the Japanese press to its announcement of its new 16-bit console – the Super Famicom. Not long after, it found its way into *Computer & Video Games* courtesy of Julian 'Jaz' Rignall. "We used to buy Japanese magazines from a shop near St Paul's [Cathedral], near to where our offices were. We'd buy these magazines every month for the most part just to see what was happening on the Mega Drive and PC Engine, those were the most popular consoles at the time. We bought some one month and lo and behold, there were some pictures of the Super Famicom," he recalls. "We got the news stories translated and turned them into news pieces for *CVG*, and we published the first pictures in the UK – which were literally snipped out of a Japanese magazine with scissors."

This early showing confirmed many of the technical details of the SNES, including its 16-bit CPU, its support for 256 simultaneous colours on-screen, its eight background modes with larger sprites and its custom sound system. The system's most impressive technical capability was its ability to rotate and scale backgrounds, shown off via a flight simulation demonstration. A new controller was also shown, featuring four face buttons in a diamond configuration and two shoulder buttons. One thing the console wouldn't support was backwards compatibility, though at this stage the system sported an AV input that the new 'Famicom Adapter' console model could be routed through. No games were shown, but it was made clear that a fourth *Super Mario Bros* and a third *Zelda* were in development.

> WE GOT THE NEWS STORIES TRANSLATED AND TURNED THEM INTO NEWS PIECES FOR CVG, AND WE PUBLISHED THE FIRST PICTURES IN THE UK – WHICH WERE LITERALLY SNIPPED OUT OF A JAPANESE MAGAZINE WITH SCISSORS
>
> JULIAN 'JAZ' RIGNALL

When the Super Famicom was shown off again in July 1989, it was close

» [SNES] *Donkey Kong Country* looked simply stunning in 1994 and contributed to extending the life of the SNES.

» *Super Mario Kart* built on *F-Zero*'s racing potential and provided some unmissable multiplayer antics.

» [SNES] If you're a programmer looking for further insight into SNES *Doom*, the source code is available at: github.com/RandalLinden/DOOM-FX.

» [SNES] Nick Jones had to change how this scene was drawn at the last minute due to a hardware bug.

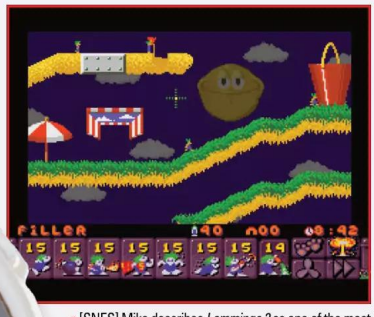
to complete. The case design was much closer to the final, with the notable differences including an extension port on the front of the console with the control ports, a headphone jack on the right of the console and a red power switch. The AV inputs for looping the Famicom Adapter through had been dropped, too. The specifications were also basically the same as the final machine, with the exception of its work RAM which was just 32KB compared to 128KB in the final machine. This time, games were shown off, too. *Super Mario 4* was in a very early state, with a mushroom-shaped world map and plenty of *Super Mario Bros 3* elements that wouldn't survive development, while that initial flight simulator demo had morphed into *Dragonfly*, a sci-fi flight game. But what would have seemed most surprising at the time was that the console was still at least a year away. While Nintendo doubtless wanted to perfect its own games, which were still in a very early state, it had also struggled to satisfy software demand in the early days of the Famicom. By allowing third-party developers plenty of time to prepare their own games for launch, it would not have the same problems this time.

"FINAL FIGHT WAS A POPULAR ARCADE GAME WITH HUGE SPRITES AND SEEING THAT COME TO LIFE IN A VERY AUTHENTIC VERSION WAS REALLY COOL. THAT WAS SOMETHING THAT WE GOT EXCITED ABOUT WHEN WE REVIEWED IT"

JULIAN 'JAZ' RIGNALL

In the days before globalisation and the internet had taken hold of society, such showings were for the domestic market only as Nintendo could enact region-specific plans as it saw fit. This meant that marvelling at the screenshots was as close as Jaz got to the machine. "That's all that we had at the time, was the screenshots. But we were very excited – we trusted Nintendo, we thought the machine would be pretty awesome, so we were already getting really excited about it." The *CVG* team passed this excitement on to the readers. "We wrote about it with a fair bit of hype at the time, it must be said, without really knowing that much about it other than the technical specifications." This approach worked, though – as did Nintendo's slow approach to delivering the console. When the Shoshinkai show of August 1990 rolled around, plenty of Super Famicom software was available to see. Third parties brought the likes of *Final Fight*, *Gradius III* and *R-Type II*, while Nintendo provided the newly named *Super Mario World*, as well as the futuristic racer *F-Zero* and computer adaptation *SimCity*.

In November 1990, the Super Famicom launched in Japan to enormous demand, and Jaz was one of the first in the UK to get access to the new console on import. "Everybody wanted to look at *Super Mario World*, we didn't know much about *F-Zero*. I just remember the entire office stopping and piling into the games room to watch the games being played, and it not disappointing." Part of the reason for going straight to *Mario* was that screenshots couldn't convey the strength of the console's signature ability. "We had no idea what was coming – we didn't really see Mode 7 until we received the machine," he recalls. "One of the games that we had with it was *F-Zero*. We were absolutely blown away by it, it was just an amazing graphical achievement at the time." Unsurprisingly, the Super Famicom was an instant hit in Japan. Nine months later in August 1991 it hit North America, rebranded as the Super Nintendo Entertainment System and redesigned with a boxier grey-and-purple look. UK gamers thankfully got the original Japanese look with the American name, but experienced Europe's traditional slow 50Hz conversions and long waiting times, with the system finally arriving in April 1992.



» [SNES] Mike describes *Lemmings 2* as one of the most technical games he's ever done, despite a console focus.

» [SNES] *Pilotwings* was one of the first SNES games seen, and would be the first to use an enhancement chip.

» [SNES] *F-Zero* was an early demonstration of just how Mode 7 set the SNES apart from every other system available.

» [SNES] *Final Fight* was a strong conversion, despite lacking both a main character and the multiplayer mode.

As the games started rolling in, players had plenty of new reasons to be impressed with the console. "*Final Fight*, that was definitely a huge game," says Jaz. "It was a popular arcade game with huge sprites and seeing that come to life in a very authentic version was really cool. That was something that we got very excited about when we reviewed it." Other favourites were very polished examples of tried-and-true archetypes. "*F1 Exhaust Heat* was another early Mode 7 game that I remember getting really excited about, because it was more of a 'racing car' racing game – I've always been a fan of more traditional racing games," Jaz remembers. "*UN Squadron* was a nice, slick shoot-'em-up that played well and was graphically impressive, even though at the time we were getting a little bit tired of all the horizontally scrolling shoot-'em-ups."

For Nick Jones of Visual Concepts, who was already a veteran coder at the time, *Contra III* was the game that really proved impressive. "I remember playing that for the first time. I was just blown away with how the game kept changing. They didn't have just the traditional 'scrolling background', they sought to make the background interactive. I remember one of the bosses where it ripped open the background and the boss was in the distance. Very creative," he remembers.

TECH TRICKS

THE SPECIAL EFFECTS THAT THE SNES WAS BUILT TO PERFORM

COLOUR BLENDING

Nintendo's hardware is capable of performing mathematical operations between pixels on different layers, in order to produce transparency effects.

OFFSET PER TILE

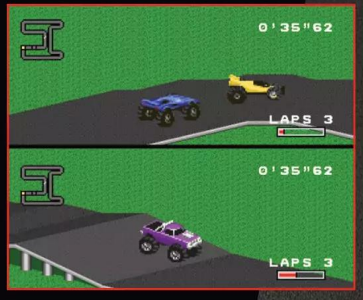
This effect allows pixels to be shifted up and down in eight-pixel-wide columns, producing effects like the undulating snake body in *Aladdin*'s final boss fight.

WINDOWING

The SNES can selectively choose not to draw certain regions of a screen, across any combination of layers. Funky shapes are achieved with DMA instructions.

MOSAIC

You know how some people's faces get pixelated on TV for privacy reasons? The SNES can do that to any of your background graphics, and often does.



HIGH RESOLUTION

It's possible to run the SNES in a 512x448 interlaced mode for increased detail. Very few games ever did this, with *RPM Racing* being one of them.

SUPER NINTENDO
ENTERTAINMENT SYSTEM

A LA MODE

EVERYONE KNOWS ABOUT MODE 7, BUT WHAT BENEFITS DO MODES 0-6 GIVE YOU? HERE'S A HANDY GUIDE TO NINTENDO'S FLEXIBLE FRAME CONSTRUCTION METHODS

	BACKGROUND 1	BACKGROUND 2	BACKGROUND 3	BACKGROUND 4	MOSAIC	WINDOWING	COLOUR BLENDING	OFFSET PER TILE	DIRECT COLOUR MODE	TRUE HIGH RESOLUTION
Mode 0	Four-colour palettes (up to 32 unique colours)	Four-colour palettes (up to 32 unique colours)	Four-colour palettes (up to 32 unique colours)	Four-colour palettes (up to 32 unique colours)	ON	ON	ON	OFF	OFF	OFF
Mode 1	16-colour palettes	16-colour palettes	Four-colour palettes	Inactive	ON	ON	ON	OFF	OFF	OFF
Mode 2	16-colour palettes	16-colour palettes	Inactive	Inactive	ON	ON	ON	ON	OFF	OFF
Mode 3	256-colour palette	16-colour palettes	Inactive	Inactive	ON	ON	ON	OFF	ON	OFF
Mode 4	256-colour palette	Four-colour palettes	Inactive	Inactive	ON	ON	ON	ON	ON	OFF
Mode 5	16-colour palettes	Four-colour palettes	Inactive	Inactive	ON	ON	ON	OFF	OFF	ON
Mode 6	16-colour palettes	Inactive	Inactive	Inactive	ON	ON	ON	ON	OFF	ON

» [SNES] The SNES was particularly well-suited to prerendered 3D in games like *Rendering Ranger* due to its wide colour palette.

» [SNES] Mike cites *Secret Of Mana* as one of the SNES titles he was impressed by, due to the quality of the pixel art.

"THE SNES AND NES ARE VERY SIMILAR AS FAR AS OVERALL DESIGN; THEY BOTH FEATURE A CPU THAT'S 6502-BASED AND HAVE SEPARATE PPU AND SPU PORTIONS OF THE HARDWARE."

RANDY LINDEN

"And when I was hanging onto a missile under a helicopter, only to discover the missile got fired while I was hanging on to it. I'd been playing games for a long time before this, but to watch how they creatively switched the gameplay up, I found myself many times saying, 'No way.' I honestly couldn't tell what was sprites and what was playfields. It was very impressive for its time." And of course, we shouldn't discuss impressive games without mentioning the biggest arcade game in the world at that time, *Street Fighter II*. The SNES had a very authentic conversion, and for over a year no other console did.

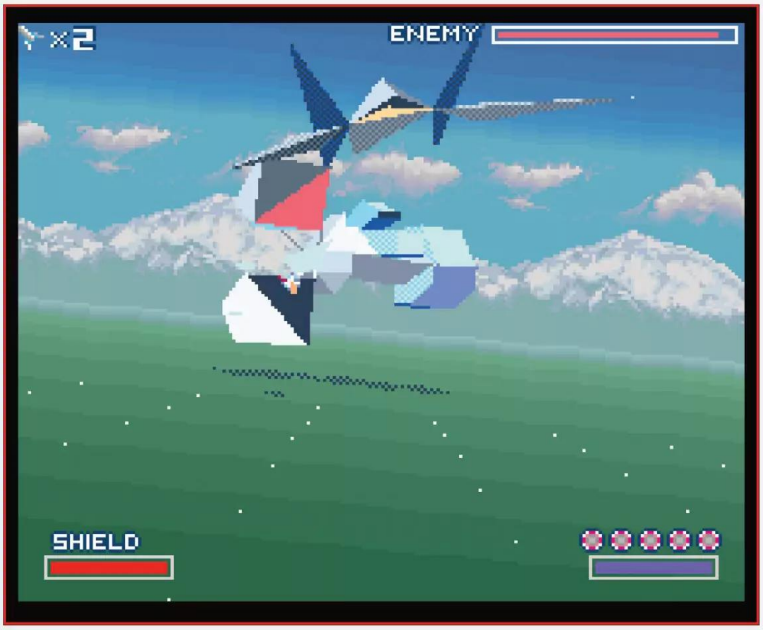
So from a gamer's perspective, Nintendo's console was on a new level – and for coders used to working on the 8-bit NES hardware, it was a huge and very welcome step up that didn't require the wheel to be reinvented. "The SNES and NES are very similar as far as overall design; they both feature a CPU that's 6502-based and have separate PPU (picture processing unit) and SPU (sound processing unit) portions of the hardware," says Randy Linden, who programmed the SNES conversion of *Doom*. "Even simple things on the NES, like scrolling graphics, required specialised cartridges, but the SNES had built-in scrolling. The SNES could do some very powerful graphics effects that weren't possible on the NES, for example, the number of graphics 'layers' was much higher on the SNES than on the NES."

It wasn't just NES coders that loved the SNES, as programmers moving from other 6502-based systems also loved it. "Up until the SNES came out I had exclusively done games on the Commodore 64, and I first got a chance to try the SNES out after finishing *Super Space Invaders* for the C64," says Chris West, now of West Racing. "I was given the job of writing *Marko's Magic Football* for the SNES at Domark and it was like a whole new world compared to the C64. The CPU being 16-bit made coding much easier after being stuck with 8-bit, and the processor being 350% faster was also great, but it was the fact you had so many sprites and so much more VRAM – it just felt like a new world of potential for doing games. For example, in *Marko's Magic Football* I did a full physics simulation on the ball for bouncing, and friction from spinning. I couldn't do that on the C64."

But did developers feel that the console represented a step up from the 16-bit machines that it was supposed to be competing with? "From Amiga/ST, sure. Lots of nice hardware to use compared to them, which is nice," says Mike Dailly, who was then working at *Lemmings* developer DMA Design. However, Mike had also been working on the PC Engine, and the advance there was not so great. "Although the graphics hardware was nicer in general, there were some limitations that were a little frustrating by comparison. Graphics could only be uploaded to VRAM in the VBlank, whereas on the PC Engine you could do it at anytime, and the CPU on the PC Engine was much faster – though I did love the 16-bit nature of the 65816." Mike's main experience with the console came with *Lemmings 2: The Tribes*, and the CPU was a real help to him. "I had to use lots of tricks to get *Lemmings* working, especially as I had to software draw most things. The 16-bit nature was lovely, though, and made working with the large ROMs much easier than a plain 6502. The PC Engine depended on 8K banking, and it was 'okay' but still tricky. The 24-bit addressing of the 65816 made life a lot simpler."

One thing that all of our developers agree upon is that the console's custom graphics hardware was amazing for its time. "The graphics and screen modes were very nice, probably the best video hardware of its time – which is why the slower CPU hurt sometimes," says Mike. "Sprites were pretty similar to the Mega Drive and PC Engine, but the tilemap screens were lovely, and Mode 7 kept things interesting!" For Chris, it was the system's colour capabilities that really stood out. "This along with the increase in resolution is just what made the SNES so exciting to us at the time. Going from being stuck with 16 basic colours, none of which ever quite suited what you needed, to a palette of 32,000 colours just felt so good." Tony West, who worked with

» The SNES pad built on the NES design and added in two extra face buttons as well as two extras inputs on the top – features that we can still see in controllers today.



» [SNES] *Star Fox*'s Super FX 3D may look primitive now, but it was fast and smooth compared to the contemporary competition.

» [SNES] *Street Racer* managed a good Mode 7 implementation, despite the handicap of not being able to use enhancement chips.

» [SNES] Having *Street Fighter II* was a big deal for Nintendo, especially since the conversion was great.

Chris on graphics for SNES games such as *Marko's Magic Football* and *Street Racer*, chimes in to agree. "I was going to say how much nicer the SNES palette was compared to the Mega Drive, you could get much more subtle colours which is why I think all SNES games always looked so much better than the Mega Drive versions. For example, in *Street Racer* the cars and characters we made were converted over for the Sega version but they lost the subtle shading. The Mega Drive just had a load more contrast in its colours that jarred my eyes compared to the SNES."

One thing that Nick appreciated was the flexibility of the graphical hardware, which offered eight different modes of operation. "The display on consoles of this period were made up of screen playfields. Machines like the C64 and Spectrum only had one single playfield. The Sega Genesis allowed two playfields, and most people used the second playfield for parallax effects – drawing two playfields but moving one at a different rate to the other. But the SNES allowed you to chose from several video modes, the most powerful of which had the ability to display four playfields simultaneously. And another really cool trick was that it allowed you to combine the four playfields in a multitude of ways. It wasn't just a bunch of playfields drawn on top of each other. You could select *how* they were to be combined. For example, you could have one playfield be 'blended' with another playfield by being 'added' to it or 'subtracted'."

> THE SNES ALLOWED YOU TO CHOSE FROM SEVERAL VIDEO MODES, THE MOST POWERFUL OF WHICH HAD THE ABILITY TO DISPLAY FOUR PLAYFIELDS SIMULTANEOUSLY
>
> NICK JONES

Use of graphics modes depended on the needs of the game. "I usually went with a graphics mode that supported three playfields. The first playfield was usually used for the main playing area, the second playfield was used as a parallax effect but I utilised the third playfield in entirely different ways depending on the effect I wanted on that particular level," Nick explains. "For example, in the very first level of *Earthworm Jim*, I had my artist Steve Crow draw the third playfield as a bright sun with sun beams. And the second playfield was a layer of clouds that moved at half speed. I made the sun playfield be added to all of the other layers which gave everything a bright look. And as you moved across the level, if the sun appeared to go behind the clouds, I smoothly changed the palette of colours that made up the sun image to be black, so they stopped being 'added', and then smoothly changed the palette of colours back to their normal values when the sun came out. It looked stunning. These were all subtle little effects; they didn't change the gameplay but just made your game seem so much more polished."

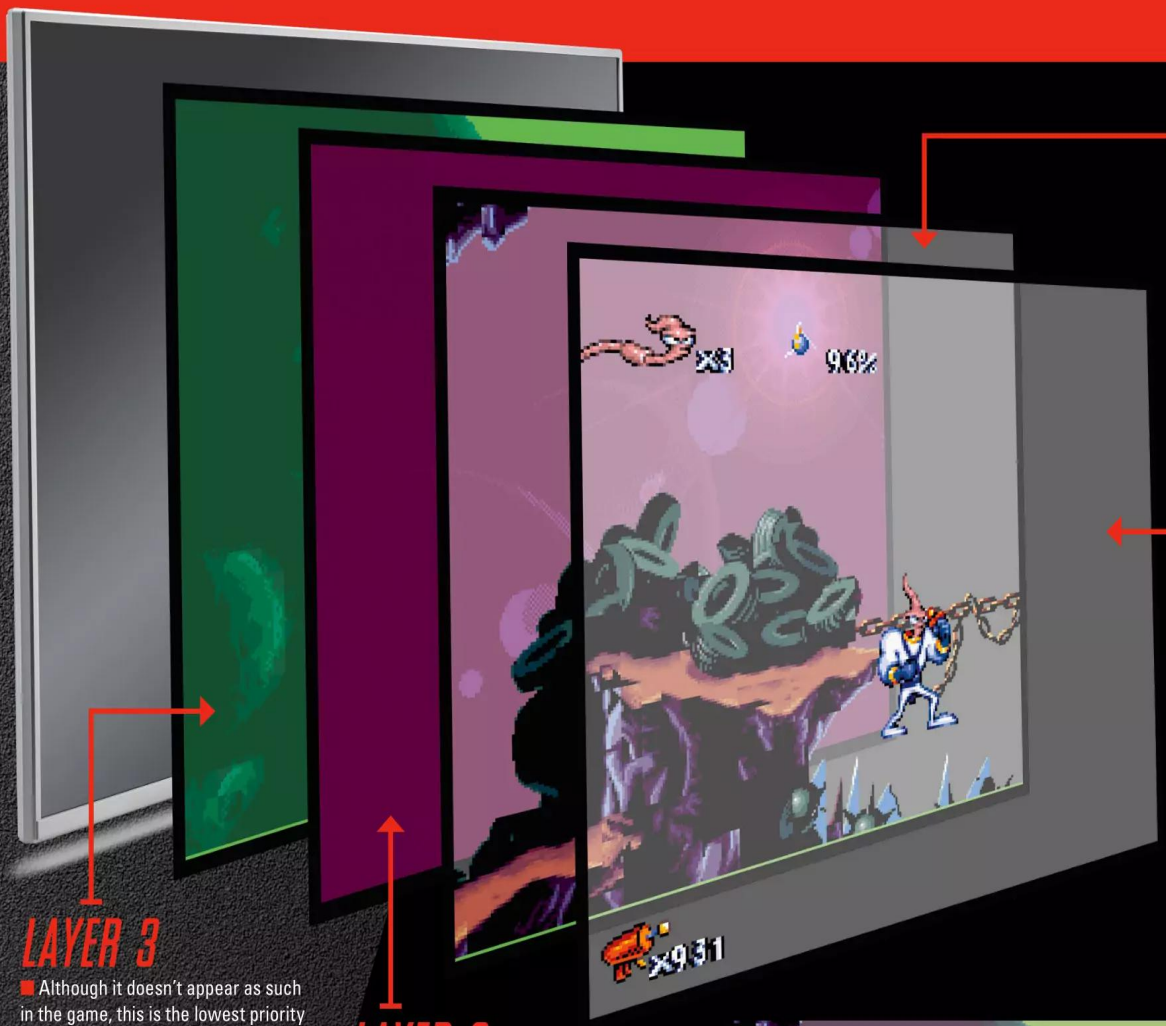
» The high-quality output of games on the SNES means that it's now a much-coveted system to collect for.

The SNES sound hardware was also a major step up, and this was a custom design by Sony consisting of an independent CPU which drove a DSP unit. This was a true digital sound processor, capable of playing back any samples you liked, with up to eight simultaneous sounds played at once. However, there were some limitations – the samples had to fit in 64KB of RAM, which wasn't much space. Thankfully pitch modulation allowed each sample to serve as many notes, but even then they were quite often compressed to save space. Still, the results could be quite amazing – no other console of the time could have handled the magnificent orchestral sound of *ActRaiser*'s Fillmore stage theme, nor *R-Type III*'s grungy rock reinterpretation of the original game's opening stage theme.

But the SNES was not an unqualified triumph, with its CPU providing programmers with some serious headaches. "The most notable weak point was not just the clock speed of the processor but the power of the processor, too. It's hard to make your game run at 60 frames per second when the processor is slow. It's like running the 100 metres in sub-20 seconds, but with only one leg," says Nick. "Another place I found this extremely limiting was when the player would start a new level. The levels were stored compressed and would be uncompressed as needed. And

FRAME-UP

THE MOST COMMONLY USED GRAPHICAL MODE OF THE SNES IS MODE 1, WHICH OFFERS A GREAT BALANCE OF BACKGROUND LAYERS AND COLOUR DEPTH. HERE IS HOW EARTHWORM JIM USES THEM



LAYER 1

■ Another 16-colour layer, this one hosts the foreground and constantly refreshes as Jim moves through the stage. Although this stage doesn't use this effect, it's possible to set priority for individual tiles so that they draw above Jim – useful if you want to show him walking behind a piece of scenery, for example.

OBJECT LAYER

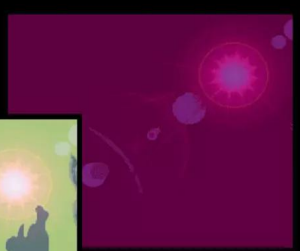
■ This is where the sprites live, like enemies, items and Earthworm Jim himself. If it moves around freely or requires lots of animation, this is probably where it's being drawn. In *Earthworm Jim* the HUD is also displayed on this layer, freeing the developers to use the three background layers to their full potential.

LAYER 3

■ Although it doesn't appear as such in the game, this is the lowest priority layer – the one which everything else draws on top of. It uses four-colour palettes, hence the limited detail on the mountains. Because this is the least-capable layer, many games use a priority mode that sets it to instead draw at the front, as a HUD.

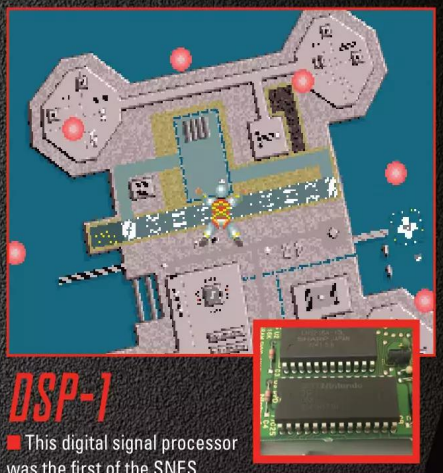
LAYER 2

■ This layer appears to be the furthest background layer, but in truth it is drawn in front of Layer 3 and adds to its colour using the system's colour-blending features. The layer uses 16-colour palettes and doesn't scroll, though it can. The effect might look odd here due to the dark palette, but once the layers are blended the addition works.



WOULD YOU LIKE CHIPS WITH THAT?

THE ENHANCEMENTS THAT PUSHED GAMES BEYOND THE LIMITS OF THE SNES



DSP-1

■ This digital signal processor was the first of the SNES enhancement chips, introduced with *Pilotwings* in 1990. It was used in 15 games – all of them Mode 7 games like *Super Mario Kart*, where it helps with the required 3D mathematical calculations.

SUPER FX

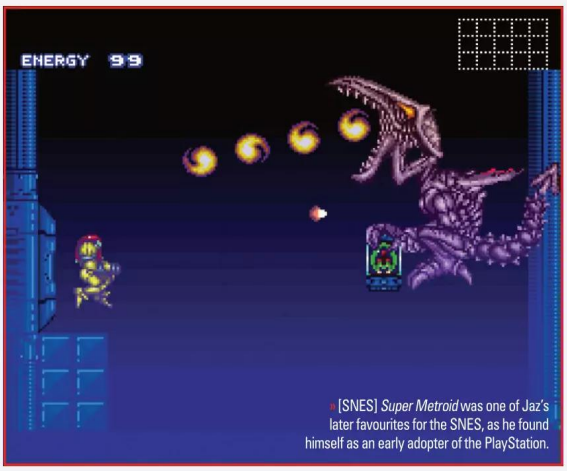
■ The most famous SNES enhancement chip was only used in eight games. Most of them used it primarily for drawing polygonal graphics, but *Yoshi's Island* also used the updated Super FX 2 for sprite operations including rotation and scaling.

CX4

■ Capcom introduced this custom hardware in 1994 with *Mega Man X2*. The chip is best known for its role in helping the game to display wireframe graphics. After its second appearance in *Mega Man X3*, it was never used again.

Photo by Dark Zero

» [SNES] *Super Mario World* comfortably outclassed its NES predecessors while leaving plenty of room for the console to show growth.



» [SNES] *Super Metroid* was one of Jaz's later favourites for the SNES, as he found himself as an early adopter of the PlayStation.

▶ decompression takes time. If you look at when you start a new level of *Earthworm Jim* on the SNES and the Genesis, you'll see that the levels start in about half the time of the SNES. That is a direct indication of the limits of the SNES processor right there."

The relative weakness of the CPU combined with a quirk of the graphics hardware to cause strain. "Another weak point was how hardware sprites were drawn," Nick says. "They were limited to two sizes of your choice. Most people went with the sizes 8x8 pixels and 16x16 pixels. So if you wanted to draw a moving image, such as your main character, you had to set up *lots* of smaller sprites to make up the bigger image. It doesn't sound terribly limiting but on a machine that was underpowered, and you're trying to draw lots of moving things on the screen, it did consume a lot of the processor power, too. On the Genesis, you weren't limited like this at all. You could have any variety of sizes from 8x8 pixels up to 32x32 pixels with all combinations in between. So the SNES had more work to do with a processor that was nowhere near as powerful." This meant that the system struggled with fast action games and those that threw around plenty of sprites, leading to slowdown in games like *Super R-Type* and *Gradius III*.

Of course, running up against the limitations of its own hardware design was something that Nintendo was well-prepared for. In the previous generation, Nintendo had commonly supplemented the hardware performance of the NES by placing additional hardware on the cartridge, in the form of chips commonly known as 'mappers'. The SNES was capable of exactly the same trick and a number of chips would be created over the life of the console, used by dozens of games, the most famous of which was Argonaut's Super FX. The processor allowed the SNES to generate 3D polygon graphics at a sufficient speed to support action games, as seen in *Star Fox* and other games, which was quite a marketing coup in 1993. But the very first game to use such a chip was *Pilotwings* – the game that had previously been shown off as *Dragonfly*, now retooled back to the original flight simulator concept – and it sported a much more appealing look than those early demos as a result.

***Pilotwings* was one of the earliest games to make heavy use of the console's most renowned graphical feature, Mode 7.** "The Mode 7 playfield, that allowed you to project the playfield in 3D, was probably the most positive thing on the SNES. I can't even tell you how many hours I poured into *Super Mario Kart* with its use of Mode 7 to draw the '3D' track. I don't think I've ever put so much time into any game, period," says Nick. Chris is intimately familiar with the feature, as he developed the fondly remembered multiplayer racer *Street Racer*. "Mode 7 was such a unique feature that really made some amazing games possible on the SNES. It was designed to allow zooming and rotating of the screen, but you could also do that per scanline – so by changing the matrix used on each line you

SA-1

■ The 'Super Accelerator' was introduced in 1995 and was the most used enhancement chip, appearing in games such as *Kirby's Fun Pak* and *Super Mario RPG*. It houses a 65C816 CPU core running at 1074MHz – triple the speed of the 5A22.

Photo by PmTar

S-DD1

■ This chip was introduced in 1996, and only used for two games – *Star Ocean* and *Street Fighter Alpha 2*. Both games had to heavily compress sprite data to fit onto their cartridges, and this chip was used to alleviate the burden of data decompression.

» [SNES] By the end of the system's life, the SNES was hard-pushed even with conversions of 2D arcade games.

» [SNES] Even Nintendo faced the limitations of the SNES, though *Mario Kart* was hardly an unwelcome result of that.

could make it look like the screen went into the distance, and therefore make driving games possible. The calculations were quite intensive for each scanline, though, and used up a lot of CPU time pretty quickly," he tells us. "Games like *Mario Kart* had custom extra processors to handle that maths so it wasn't a problem."

With that in mind, it's not a surprise that a Mode 7 game was the first to cause Nintendo a problem, but the console's most renowned special effect wasn't just a workout for the CPU – it was tough to design around. The Mode 7 tilemap was limited to a size of 128x128 tiles, drawing from a maximum of 256 unique 8x8 pixel tiles. This could be fudged by constantly updating the tilemap, but it wasn't a universally applicable solution, as Nintendo found when it tried to create a multiplayer version of *F-Zero*. "To have a split-screen in *F-Zero* would require rebuilding the 128x128 map for each half of the screen depending on where each player was in the world, and that just wasn't doable in the raster time," Chris tells us. In **RG167**, Nintendo's developers revealed that their solution was to slow the game down to work within the 128x128 limit, ultimately resulting in a change of focus that led to the creation of *Super Mario Kart*. Chris ultimately took the same approach. "In *Street Racer*, we just used maps that were 128x128 like *Mario Kart*, so split-screen was just a case of calculating the view matrices for each line which you are doing anyway." Playfield size wasn't the only limitation, either. To achieve the kind of scrolling background graphics on the horizon as seen in games like *Street Racer* and *Super Mario Kart*, it was necessary to switch modes mid-frame during horizontal blanking, as Mode 7 only allowed for a single background layer to be drawn.

But while it was possible to add extra chips to make up for the console's weaknesses, it wasn't always practical. "For *Street Racer* we could not use any extra CPUs as it added too much cost, so we had to come up with a way of doing the same thing but doing it a lot quicker," says Chris. "Nick Jones started the work on that but then went to work for Shiny in the States, but I took what he did and adapted it and changed it to give a better perspective and sped it up a bit so we could get the same look as *Mario Kart* but for a fraction of the CPU usage. That then freed up enough CPU time to have bigger cars on screen.

"Not long after *Street Racer* came out Mev [Dinc, Vivid Image founder] was asked to visit Nintendo to show them *Street Racer*, and when he got back he said they could not believe that we did what we did with no extra processors on the cart. So that is something I am proud ▶

> "FOR STREET RACER WE COULD NOT USE ANY EXTRA CPUS AS IT ADDED TOO MUCH COST, SO WE HAD TO COME UP WITH A WAY OF DOING THE SAME THING BUT DOING IT A LOT QUICKER"
>
> CHRIS WEST

» Quality arcade ports like *Street Fighter II* supplemented Nintendo's wave of first-party games.

SUPER NINTENDO
ENTERTAINMENT SYSTEM

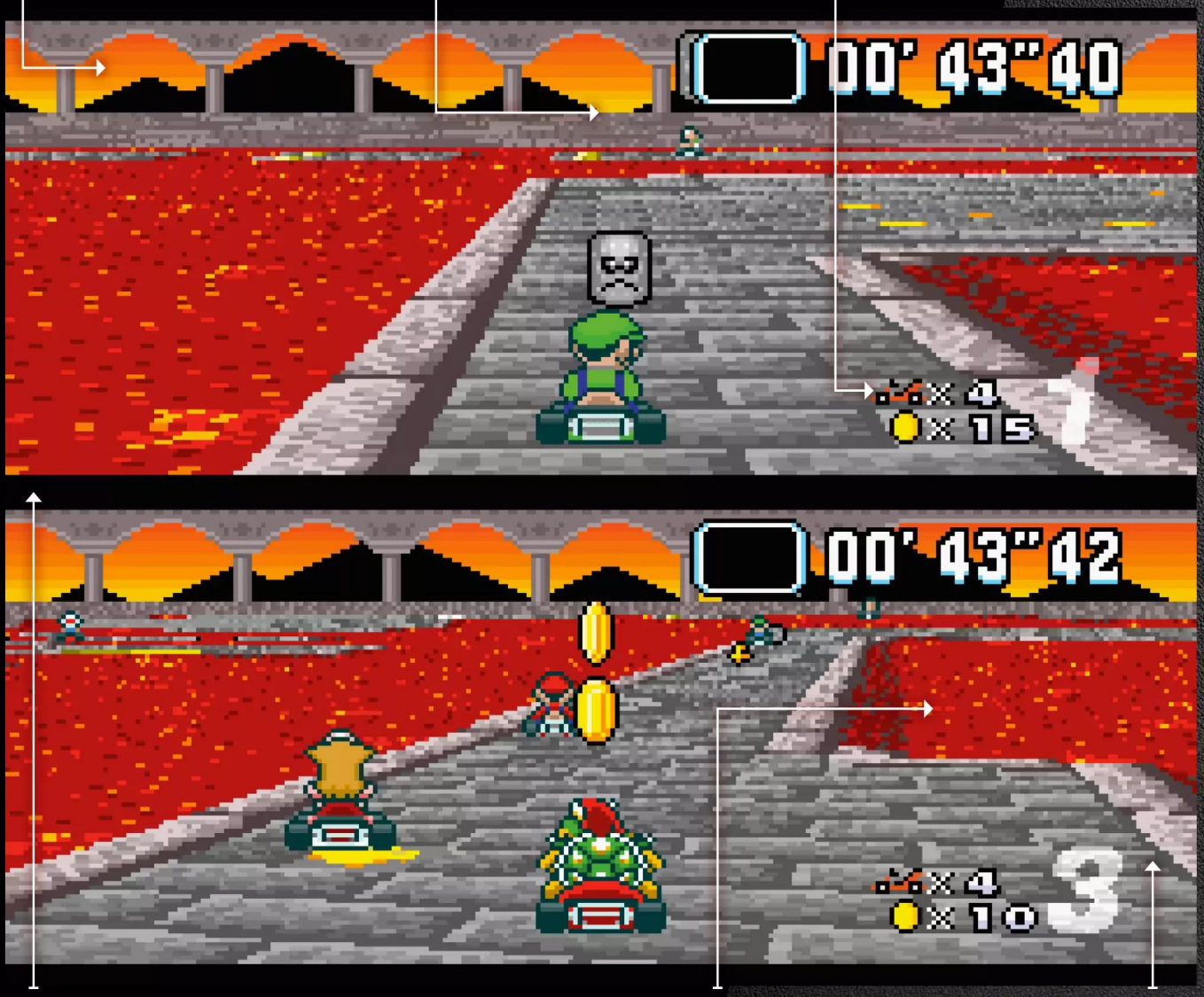
SEVENTH HEAVEN

HOW CLEVER PROGRAMMING MADE MODE 7 MORE THAN JUST A NEAT GRAPHICAL TRICK

1 This top part of the background doesn't use Mode 7 at all, instead using one of the more capable background layers.

2 At this line, the SNES switches modes to begin drawing the Mode 7 background layer in all of its rotating, scaling glory.

3 Since Mode 7 only allows for a single background layer, HUD elements like counters are drawn to the screen as sprites.



4 This thick black line is drawn to give the SNES enough time to revert modes and set up the second player's screen.

5 The transformation matrix for the Mode 7 playfield has to be altered every line in order to simulate perspective effectively.

6 The level is limited to a single playfield's size, as it's impossible to refresh the Mode 7 tile map for player two's screen.

"THE MODE 7 PLAYFIELD, THAT ALLOWED YOU TO PROJECT THE PLAYFIELD IN 3D, WAS PROBABLY THE MOST POSITIVE THING ON THE SNES. I CAN'T EVEN TELL YOU HOW MANY HOURS I POURED INTO SUPER MARIO KART WITH ITS USE OF MODE 7 TO DRAW THE '3D' TRACK. I DON'T THINK I'VE EVER PUT SO MUCH TIME INTO ANY GAME, PERIOD"

NICK JONES

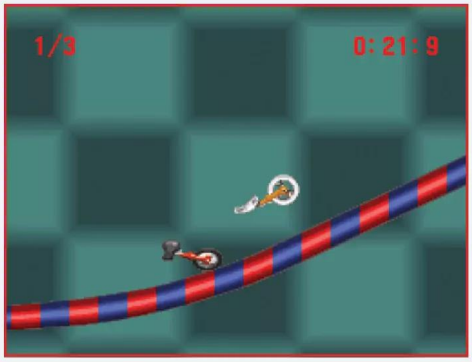
to have done, something that the people who built the hardware didn't think was possible." That wasn't the only technical achievement that *Street Racer* showcased, either. "I was also very happy that we had the first four-player game of its type on any console, again something Nintendo just didn't think could be done," Chris continues. "That just came out of a bored evening of coding. I had just got the two-player mode working in the game and I just wondered if it was possible to push it any further, so I changed a few bits and got three players working, and then four. That was satisfying."

Despite being a technical marvel, the SNES didn't sustain the near-monopolistic dominance that Nintendo had enjoyed during the 8-bit era, but there was no way it could have done. Where the NES had been able to sweep into an open market that many had abandoned as a fad, this time it faced credible competitors that were able to take advantage of Nintendo's reluctance to retire its golden goose. It also faced increased regulatory challenges when it came to its relationship with third-party publishers, ensuring that it couldn't tie up the software supply for itself. But by waiting to see what the opposition had in store, Nintendo was able to deliver a technically superior console that allowed it to retain its position as the global market leader, despite a fierce challenge from NEC at home and Sega internationally.

This success undoubtedly influenced Nintendo's strategy for the future, so it ensured that the N64 was also the last of its generation to arrive on the market, in the interests of being the most powerful console. This left Nintendo reliant on the SNES to hold the fort against a variety of next-gen competitors, and it did an admirable job of this. Going into the 1994 holiday season, the Jaguar and 3DO were starting to see substantial software development and Sega was launching the 32X add-on for the Mega Drive. Nintendo was able to repel that triple threat with ease with *Donkey Kong Country*, developed in the UK by Rare. Using Silicon Graphics hardware, the company was able to prerender 3D visuals that looked convincing on the SNES giving the game an incredible look. "I remember seeing it for the first time and being very impressed by it," says Jaz, who by this point was working for Virgin Games. "A lot of clever neat graphical tricks to make them look 3D and really give the graphics depth and detail, and they were fun to play – albeit difficult. It helped maintain excitement for the system, even when there were things like the PlayStation emerging." Millions of copies were sold, and doubtless plenty of SNES consoles with them.

Rare would continue to use its 'Advanced Computer Modelling' technology in *Donkey Kong Country*'s two sequels in 1995 and 1996, as well as the arcade game *Killer Instinct* which saw a SNES port in 1995. However, other games in this late period saw the console become increasingly reliant on the use of the Super FX and other enhancement chips to keep up with the competition – in 1995 alone, more games used them than had done in the first four years of the console's life. One such game was *Doom*. "I was working independently on my own 3D engine called 'RAGE' (or 'Reality Engine') that was designed for the Super FX chip and realised I could write conversion tools which processed *Doom* data into the format required by my engine," says Randy Linden. "After a few months of development, I had enough of the game operational as a proof-of-concept demo. I showed the prototype to Sculptured Software who then brought the demo to id Software, who were very impressed with what I had accomplished and gave us the go-ahead to complete the game."

» [SNES] The SNES couldn't rotate sprites without help – *Yoshi's Island* here uses the Super FX 2 to do so.



» [SNES] The slow CPU didn't mean universally slow games – *Unirally* moved at a pace that could easily overwhelm newcomers.

All of the new consoles could run *Doom*, so for the venerable SNES to do so was quite a coup. However, the truth is that a stock SNES would not have come close to running the game, given how heavily the engine relied on that enhancement chip. "The RAGE game engine runs approximately 95% on the Super FX 2 chip and 5% on the regular SNES 65816 hardware. The Super NES 65816 handles DMAs, graphics transfers, interrupts, reading the joysticks etc, but the actual game runs on the Super FX – this includes things like visibility determination, collision detection, object movement and enemy AI, plus all the drawing of the graphics is done on the Super FX side as well," says Randy. Of course, that had a cost associated with it – when the game hit the UK market, it was a remarkable £64.99. "At the time *Doom* was released, it was the second-most expensive cartridge available! The only thing which would have increased the cost of the individual hardware units would have been to add a battery for save games," Randy continues. "The publisher, Williams, went to great lengths to make *Doom* for the SNES a very special game and that's why the cartridge itself was red instead of the usual grey colour."

> "AT THE TIME DOOM WAS RELEASED, IT WAS THE SECOND-MOST EXPENSIVE CARTRIDGE AVAILABLE! THE ONLY THING WHICH WOULD HAVE INCREASED THE COST OF THE INDIVIDUAL HARDWARE UNITS WOULD HAVE BEEN TO ADD A BATTERY FOR SAVE GAMES"
>
> RANDY LINDEN

The SNES was coming to the end of its life, and by 1996 there was no disguising it. It had no hope of competing with the 3D consoles, even with the Super FX, and it was beginning to lose pace with 2D games. By the middle of the year the N64 swept in to give the SNES a well-deserved rest, and would define gaming in its own unique way. But that's a story for another time – what matters is the legacy of the SNES, a console that proved the success of the NES was no fluke, and that Nintendo would not relinquish its crown easily. Much more than with most other consoles, the decline of the SNES marked the true end of an era.

"To me, things like the PlayStation represent the first consoles of the modern era – 3D graphics, CD technology – it was a considerable step ahead of the SNES and the Mega Drive. To me they represent the end of that cartridge-driven era," says Jaz. "I look at the SNES as being a real defining moment in gaming, in terms of its 16-bit legacy. It didn't bring a lot of new ideas to the table, but it did refine and establish games designs. Platform games, shoot-'em-ups, in particular RPGs – those more traditional games, it took those and brought those to a pinnacle that hasn't ever been beaten, because there just isn't anything out there that can compete with that very definition of 16-bit gaming. I think that's why it's so well-loved – it represents an era that people copy, but it's something that won't ever be recaptured." We can't agree more, and if there's one thing we'd bet on in the retro gaming world, it's that 30 years from now, the likes of *Super Mario World* and *F-Zero* will still be seeing regular play. ✱

The History Of the Settlers

Tiny people invaded the Amiga in 1993, building a franchise that, despite several ups and downs, is still going strong some 27 years later

Words by Lewis Packwood

THOMAS HÄUSER

Thomas cofounded Funatics after he left Blue Byte in 1998, and later worked on *The Settlers II: 10th Anniversary* and *The Settlers: Heritage of Kings*.

"With *Settlers* we got lucky, it really caught people's attention," recalls Thomas Hertzler, cofounder of German studio Blue Byte. "It was the best game that we'd ever had the opportunity to deliver. We all thought it was the bee's knees." And best of all, it landed in the company's lap at a time when it was desperate for a hit to stave off bankruptcy.

Hertzler founded Blue Byte in August 1988 with Lothar Schmitt, initially operating out of Hertzler's attic in Mülheim. The two of them had previously worked together at Rainbow Arts, publisher of the *Super Mario Bros* 'homage' *The Great Giana Sisters*, but both were ready for a new challenge. "He and I, we hit it off pretty well, and so we decided to set up our own company, and that's what we did," recalls Hertzler. "[We were] young, naive and bulletproof – so sure, why not?"

Some of the first titles they released were *Great Courts* in 1989 (also known as *Jimmy Connor's Pro Tennis Tour*) and the turn-based tactics game *Battle Isle* in 1991. "I was into strategy games and Lothar was into sports games," says Hertzler, explaining the odd genre dichotomy. Both sold reasonably well, but Hertzler felt that *Battle Isle* in particular could have sold much more, and wondered whether that was down to the publisher, Ubisoft. "It's very hard to tell," he says, "Is it the lack of support from the publisher? Or is it just the game? When you do it yourself, you can tell, but if you have that middleman, you just don't know. And I think it could have done better."

So for the next game, 1992's *History Line: 1914-1918*, Blue Byte renegotiated its deal with Ubisoft, taking over publishing duties for Germany, Austria and Switzerland, and leaving the French firm to handle the rest of Europe. But although the game reviewed well, sales were underwhelming – something Hertzler puts down to choosing to depict World War I rather

» [Amiga] The flags on guard huts indicate how close they are to enemy territory: a solid cross means they're near the border, while a single line means they're further away.

» [Amiga] Thomas Hertzler says that the temptation was to keep adding features and buildings to *The Settlers*, but by the time it launched, "it was already the most complex product we'd ever done".

» [Amiga] You can tweak almost everything in *The Settlers*, like the ratio of wheat going to pig farms and windmills, and how much coal the gold foundry and toolmaker get.

than World War II. Suddenly, the pressure was on to find a hit.

That's when a student called Volker Wertich got in touch with a demo of what would become *The Settlers*. "We invited him up to Mülheim," says Hertzler. "He was in the southern part of Germany. So we met, and the first thing that came to mind was, 'Oh this looks a little bit like *Populous*.'" But any resemblance to Bullfrog's title was superficial – there had been nothing like *The Settlers* before. Volker's game presented a tiny but complicated economy, where little computer people ferried goods to and fro in real time (see 'Economics In Miniature'). "It looked great," says Hertzler.

Still, the graphics of the demo were basic, and there was little sense of place. "There wasn't much there," Hertzler recalls. "There was a lot of green, there was some brown for the pathways, and there was a building, so it was more technical, really." But Hertzler says they quickly decided on a setting and began to rapidly flesh out the game. "We chose medieval, and it all developed from there pretty much naturally," he tells us.

The Blue Byte team would handle graphics and sound in-house, while Volker programmed the

» [Amiga] Building an efficient road network is essential. The icons indicate how steep the path is: the steeper it is, the slower the goods are carried.

» [PC] The icons in *The Settlers II* show the size of building you can construct on any given space. Large buildings, like the farm, can only be built on castle icons.

Diary
Whoever is or was on this island knows all about the building trade. We found the ruins of a mighty fortress of exemplary construction. Our architects have already drawn up a building plan.
Advance into the interior of the island. Pay close attention to the supply of provisions and raw materials.
Continue

» [PC] *The Settlers II* added a rudimentary story, which starts with a group of Romans exploring a series of islands.

» [PC] The castle looks radically different in *The Settlers II* as a result of the Roman theme, but the core gameplay is very similar to the original game.

game at his home some 250 miles away, keeping in touch with the Mülheim office via phone, fax and mail. Hertzler recalls that development proceeded relatively smoothly, despite the distance. "Volker was very organised. I think he had taken a year off from college to do this. He said from the beginning, 'After this, I'm going to continue my degree.'"

Almost the entire game was written in assembler code, and Hertzler still marvels at its technical wizardry. "I play *Civilization V*, which is turn-based, and on my 4GHz, Intel i7, blah blah PC, it still takes its sweet time when I'm done to calculate its moves. In *Settlers*, the baseline was the Amiga, so it had to work on an 8MHz Motorola 68k – and in real time." And in addition to plotting the paths of hundreds of tiny characters, *The Settlers* offered an impressive split-screen mode – something that Hertzler says everyone wanted at the time. "Everybody was telling us we need multiplayer. The retailers, the distributors, the editors: multiplayer, multiplayer, multiplayer."

Development took around a year, and Hertzler recalls that towards the end, the company was under enormous financial pressure. "Just a few months before release, Lothar my business partner decided to leave. After I had bought out Lothar, we were financially in dire straits. I mean, it was coming right down to the wire. One bank had kicked us out with a ridiculously small overdraft that we had at the time – I mean, it was nothing. There was something going on at the time in the

Economics in Miniature

How the buildings interlink in the original Settlers

Lumberjack's Hut
This is probably the first thing you'll build. The lumberjack chops down trees, which can be sent to the sawmill to be made into planks.

Fisherman's Hut
The fisherman is by far the easiest and cheapest way to get food for miners. With only a couple of boards, you've got yourself a fisherman's hut. Now you just need a lake.

Quarryman's Hut
The quarryman chips away at hunks of granite to make stone blocks, which are used – along with wood – to make guard huts and larger buildings, like windmills.

Forest Ranger's Hut
To enable a steady supply of logs, you'll need to plant new trees to replace the ones the lumberjack cuts down, which is where this happy chappy comes in.

Sawmill
The sawmill turns logs into wooden boards, which are essential for making buildings. The shipmaker and toolmaker also need wood.

Wheat Farm
The wheat farm needs a large expanse of flat ground around it for fields, and hence is a tricky one to place. The wheat heads off to the windmill and pig farm.

Warehouse
When supply lines are stretched, this comes in handy to store goods where they're produced, rather than shipping them back to your castle.

Iron Foundry
Iron ore is turned into iron at the foundry, then it goes off to the blacksmith to be made into weapons or the toolmaker to be made into, well, tools.

Shipmaker
The shipmaker is one building you will only rarely need to construct – it makes boats for 'roads' that go across water.

Blacksmith
This is essential for when you begin clashing with neighbours; the blacksmith churns out swords and shields for knights.

Tool Maker
You'll need a toolmaker to produce axes for lumberjacks, hammers for geologists, scythes for farmers, saws for sawmill workers and so on.

Gold Foundry
Gold ore is processed into solid gold ingots here. This provides motivation for your knights: the more gold they have, the more they will want to fight.

IT industry where two major players had gone belly-up, and so they got really careful and said, 'Look, we have to cancel your overdraft.' But I was able to find another bank, a local bank, and they carried us over – but if *Settlers* had flopped, I think we would have been done for."

Hertzler admits to working "crazy" hours at the time, and the long days and financial burden had a dramatic impact on his health. "It was pretty high stress, and I paid the price for it. I ended up being in hospital just before *Settlers* shipped. They took me in an ambulance because I thought I had a heart attack. It was the night before ECTS [European Computer Trade Show], and I was working on the loop video for the show on my Macintosh, and yeah, in a minute I was flat on the ground." The doctors told him that the episode was down to stress rather than heart failure, but Hertzler was still in hospital a few days later when he received news about the launch sales. "I remember that day," he says. "The accounting lady came in, and she ran down the numbers, and I'm like: 'Oh, well that's good.' 'Yeah, they're probably gonna order 20,000 more.' 'Oh, that's good!' It was great. The day after we were thinking, 'Okay, what are we gonna do next?'

"I think we sold 60,000 on day one in Germany, Austria and Switzerland. So that was incredible. I don't remember what Ubisoft sold at the time, but the numbers were pretty good – not so much in the United States." Interestingly, the strategy specialist SSI handled publishing duties in the States, where it decided to change the game's name to *Serf City: Life Is Feudal* – presumably in reference to *SimCity*. The American cover featured a cartoon peasant grinning insanely and holding a glinting hammer, while a malevolent head floated in the sky behind him – quite the difference from the friendly, rotund knight on the European box art.

Blue Byte had a much-needed hit on its hands in *The Settlers*. But when it came to making a sequel, Hertzler says it proved surprisingly difficult. "It was very clear [Volker] wasn't gonna do another game, which I couldn't understand because it was doing really well. But, you know, if you have traditional

» [PC] *The Settlers III* expanded the military ranks with swordsmen, bowmen and spearmen, which have a rock, paper, scissors relationship with one another.

» [PC] Temples were introduced in *The Settlers III*, and the players were able to call on divine intervention to do things like turn iron into gold.

"Everybody was telling us we need multiplayer. The retailers, the distributors, the editors: multiplayer, multiplayer, multiplayer"
THOMAS HÄUSER

» [PC] The three playable races in *The Settlers III* were the Egyptians, Romans and Asians. Each had different economic pathways and skills: for instance, the Romans can turn wood into charcoal.

WINDMILL
■ Wheat goes in, flour comes out – it's as simple as that. For maximum efficiency, you'll need to place the windmill near the wheat farm and bakery.

GRANITE MINE
■ Like the quarryman's hut, the granite mine spits out stones. Most buildings require stone blocks in their construction, so they are one of the most essential goods in the game.

COAL MINE
■ Coal is sent to the iron foundry, blacksmith and gold foundry to power the furnaces. If there's no coal, then there's no fire – and no weapons or gold, and you don't want that.

GOLD MINE
■ Towards the end of a game, when wars are kicking off all over the place, gold becomes crucial for motivating your army. Gold ore is sent from here to the gold foundry.

IRON MINE
■ Iron is a useful resource and used to make weapons and tools. Ore is taken from the mine to be processed at the iron foundry.

BAKERY
■ The baker turns flour into bread, which then goes off to feed those peckish miners. Weirdly, only miners need food in *The Settlers*.

BUTCHER
■ The next destination for porkers from the pig farm is the butcher. Ach, it's a hog's life. The meat then gets carted off to the miners for lunch.

PIG FARM
■ Wheat doesn't just go to the bakery – it also ends up at the pig farm to sate the hungry hogs. Swill is too good for them, it seems.

GUARD HUT
■ When a soldier occupies a guard hut, your border magically extends out around it, so they're essential for expanding your territory.

GUARD TOWER
■ Whereas a guard hut only houses three knights, a guard tower holds six, so they're handy for protecting hostile borders.

GARRISON
■ Garrisons take an enormous amount of wood and stone to build, but they house a whopping 12 knights, so they're great for massing your forces.

Evolution vs Tradition

HOW THE SETTLERS WAS BRIEFLY SPLIT INTO TWO SUB-SERIES

In a response to fans who criticised the changes made to the *Settlers* formula over the years, Ubisoft decided to split the series into two strands – 'tradition' and 'evolution' – starting with a tenth-anniversary remake of *The Settlers II* to kick off the 'tradition' strand in 2006. Thomas Häuser, who directed the original version of *The Settlers II*, was brought in to help out on the remake, and the game also spawned an expansion called *Die Nächste Generation – Wikinger* (*The Next Generation – Vikings*), although this was only available in the game's core market of Germany. A standalone sequel in the same vein, *Die Siedler: Aufbruch Der Kulturen* (*The Settlers: Rise Of Cultures*) was released in 2008, again only in Germany, and was developed by Häuser's company, Funatics.

In an interview with *Eurogamer Germany* in 2008, *Aufbruch Der Kulturen* game designer Kathleen Kunze responded to the question of why Ubisoft had decided to split the series: "So basically it wasn't our decision, but the decision of the fans. There are people who say, 'We want to continue this old *Settlers* concept.' You have a lot of fun playing the old *Settlers II* concept. And then we have the people who always want new things. It developed more or less that

way. Because of this, there was a lot of disagreement in the community. It was decided to label the things as 'tradition' and 'evolution'. And that's where the whole thing came from." [Translated from German.]

The Settlers II remake stayed faithful to the game mechanics of the original, with road building and without the direct control over settlers that was introduced in *The Settlers III*, but it updated the game with 3D graphics and made the different races more visually distinct, as well as added minor tweaks such as the ability to upgrade military buildings. Its expansion introduced the Vikings as a playable faction, while *Aufbruch Der Kulturen* introduced different economic models for each race and altered a few parts of the economy: for example, making bread required salt as well as flour and water.

The 'tradition' strand didn't last long, however: *Aufbruch Der Kulturen* marked the final entry in the series' offshoot.

▶ parents, German parents, 'You gotta get your degree.' You know, 'You're not gonna do that game stuff. No, no, no, you got to get a real job!'"

And with Volker gone, there was little appetite among the rest of the team for doing a sequel. Thomas Häuser, who had joined Blue Byte back in 1988 when he was still at school, recalls that they regarded *The Settlers II* as a possibility rather than an inevitability. "When we started thinking about *Settlers II*, it was really a discussion of if we wanted to do a follow-up. These were not the days where every year you do one version of a game."

Hertzler was keen to capitalise on the first game's success, but he remembers it was no easy task to bring the team around. "It took me a while to convince my in-house guys to take over. It was so difficult – 'Oh we don't want to do it, we want to do something new.' Nobody wanted it. It wasn't theirs. I had almost given up, where I'm like, 'You know, maybe they're right. Maybe we should do something original.'"

He did manage to get the team on board eventually, with Thomas Häuser in the role of project lead. Still, this initial reluctance doesn't fully explain the three-year gap between the release of *The Settlers* in 1993 and its sequel in 1996. Häuser says that he's not sure why it took so long, as the game certainly didn't take three years to develop. "I don't know what happened in between. I know that I worked on some games that were cancelled, I think that might be 1993, 1994. But after we decided to go with *Settlers II* [...] from my mind, the development was not much more than one year."

"It was really difficult to motivate them at the beginning," recalls Hertzler. "I think it was halfway through, maybe, when things came together, and everybody got more excited about it." Häuser agrees: "Something which I've learned over the years is when you start a new project, often you do not fall in love immediately. But while doing the game, you find motivation in [the] details and working with the team, and stuff like this."

The team also faced some technical challenges. By this point, the Amiga was on its way out, so development switched to PC – a format that Häuser was unfamiliar with. "I'd done Amiga and Super Nintendo stuff before, and *The Settlers II* was my first big PC game," he says, "so the first time using a C compiler instead of assembler and stuff like this. It was quite challenging because ultimately we wanted to do it in C and not to fall back to the assembler."

On the other hand, Häuser had a clear plan in mind for the sequel. He had done some QA on the first *Settlers* game, and made a few notes at the time about things he didn't like and what he might add or change. "I took these notes to Thomas Hertzler, and we discussed it, and he said something like, 'Go for it,'" Häuser recalls.

"One of the most important things was, first of all, to have more modern graphics," he continues. "It was not state of the art, but it was much more detailed and [had] much more animation." Generally though, Häuser says he wanted to keep the core of the sequel exactly the same. "I wasn't thinking about changing the game too much, because the basic ideas of, you know, the transport systems, the flags and the carriers walking around,

» [PC] *The Settlers IV* introduced the Vikings as a playable race for the first time. The Vikings, Romans and Mayans eventually team up against the game's big baddy, the Dark Tribe.

» [PC] *The Settlers IV* adopted a similar graphical and gameplay style to the previous game. Again, carriers mill around freely rather than standing on roads.

it was something which was set for me at this time. Later on in the *Settlers* history you see that this drifted away. But for me, *Settlers* was based on this transportation system optimising."

Nevertheless, the sequel introduced several new elements, including hunters, breweries, wells and catapults. The game's setting was also pushed back in time to the Roman era, and Häuser added in a few rudimentary story beats. "There was some minor text which was sort of the storyline," he says. "But I think from today's point of view, we could have done much better with this." Still, Hertzler thinks that, ultimately, the story isn't too important in the *Settlers* games: "You don't really have to have a consistent story, it's not like it takes you from one part in this story in the universe to another part – it's a *Settlers* game."

Häuser says that the final push to the game's finish in 1996 was stressful because another Blue Byte game, *Archimedean Dynasty*, had slipped, meaning the mastering of *The Settlers II* was brought forward. "I think I spent five days nonstop working on the title in the office just to get it done," he recalls. "And it wasn't just me, it was the whole team, and it was very intense."

Still, the glowing reviews of the game made up somewhat for the difficulties, he says. "The first time we saw something like a 90-point rating we were, of course, very enthusiastic, and yeah, it was great for us. The most rewarding experience was if you talked to people on the streets later on, and they had played your game."

After finishing *The Settlers II*, Häuser worked on several other Blue Byte titles, like *Extreme Assault*, but ultimately decided to leave in 1998. He felt that the company had changed by then. "The spirit got a little bit lost, it was more a business and it was more marketing-driven," he says. That meant it was all change again for the next entry in the series.

Volker Wertich came back on board for *The Settlers III*, released in 1998, and he had a few ideas on how to change the formula. This was the first game to feature online multiplayer, and players could also choose between three very different races. But one of the biggest changes was ditching the road system; instead, *The Settlers III* featured something similar to 'desire lines'. "Depending on how many times a settler would walk over a certain path," says Hertzler, "the footprints would stay in place and it would create a path. And depending on how frequently somebody would walk across it, it would turn into a road. And some people liked that, and some people didn't like that."

The graphics also changed radically, with a much chunkier style, and the game added many more buildings, like temples and marketplaces, as well as residences that would generate settlers rather than them spawning in a castle. But the most dramatic change was that now players could individually select and move settlers by clicking on them.

Despite these fairly big rethinks, some reviewers criticised the game for being too similar to the last one, with *IGN* declaring "there's nothing really new or innovative here". Such negative points had little impact on the series' soaring sales figures, however. "It was a steady way

» [PC] Blue Byte head Thomas Hertzler says he would have taken the series in a different direction after *The Settlers IV*, fearing the games might get stale: "The question was, how long does it last? How much further can we take it?"

» [PC] Thomas Hertzler tells us that the sales figures for the *Settlers* series were steadily increasing at the point he left: "Numbers were going up and up and up."

» [PC] A series of tutorials in *The Settlers IV* take new players through the basics – and by this point in the series, there's a lot to take in.

» [PC] *Heritage Of Kings* is much more story-focused than earlier entries, beginning with the hero Dario defending a village from the dreaded Black Knights.

» [PC] There's more of an RPG feel to *Heritage Of Kings*, with the player's hero character accepting 'quests' from NPCs – who naturally have exclamation marks over their heads.

In the Style of... GAMES INSPIRED BY THE SETTLERS

ANNO 1602

■ Developed by the Max Design in 1998, *Anno 1602* shares DNA with the *Settlers* games, tasking players with colonising islands and slowly building up their economies. *Anno 1602* spawned many sequels, most recently *Anno 1800* in 2019, with Blue Byte taking over development of the later games.

CULTURES: DISCOVERY OF VINLAND

■ Funatics, the company cofounded by *Settlers II* director Thomas Häuser, released *Cultures* in 2000, and visually it's easy to spot the similarities with the *Settlers* series. The plot centres on a group of Vikings who are in search of the shards of a meteor with magical properties. The game was a big hit in Germany, spawning three sequels.

BANISHED

■ This 2014 city-builder from Shining Rock Software is like a more complicated version of the economic management system featured in *The Settlers*, but with combat removed. The player must build up a settlement by directing the citizens to farm, fish, chop wood and so on, while carefully optimising the economy.

up," remembers Hertzler, "and *Settlers III* broke all records again."

Volker departed to form his own company before the release of *The Settlers IV*, and wouldn't return to the series he created for another 20 years (see '*The Settlers 2020*'). Meanwhile, Blue Byte was foundering after an attempt to float on the stock market just at the point when the dotcom bubble burst. "I got a phone call after spending a ton of money, I mean, six figures, many, many six figures, to get the company ready for an IPO," says Hertzler. "I had to spend all this money because you have to go back five years and redo your entire books. Then I got the call from the banks: 'Mr Hertzler, considering the current economic climate, blah, blah, blah, you'll probably want to hold off on the IPO.' And when the IPO didn't happen, I'd had enough."

Following this, Ubisoft bought Blue Byte in February 2001, resulting in some dramatic cutbacks. "They closed the US office," says Hertzler. "They closed the office in the UK. They kept the office in Germany because they were still working there on *The Settlers* and they had other plans for them. I had a one-year consulting contract with them in case anything would go horribly wrong and I could step in and help them out. Never got a call, never got a beep from them. So I started my pilot's licence, and that was it."

» [PC] Like *Heritage Of Kings*, *Rise Of An Empire* puts an emphasis on hero characters, but the game is much less combat-focused.

Hertzler spent the next ten years in aviation, running a fixed base operation in Phoenix, Arizona. After that, he formed the developer Stratotainment, working on a spiritual successor to *Battle Isle*, but wound this up after he couldn't find a publisher. Nowadays, he's working on a project called Mega 65, which aims to recreate the Commodore 65, a prototype successor to the C64 that was developed in the early Nineties but never released.

Ubisoft oversaw the release of *The Settlers IV* in early 2001, which was almost finished when it bought Blue Byte. The launch was marred by bugs which led to a series of patches, and reviewers again criticised its similarity to the previous game. Nevertheless, *The Settlers IV* did change things up with the introduction of the corruption-spreading Dark Tribe, with players using gardeners to restore blighted land. "It did really well for them," says Hertzler, "I mean, I'm pretty sure they made all their money back within a year so."

In 2004, Thomas Häuser's new game development company, Funatics, was brought in on a freelance contract to work on *The Settlers: Heritage Of Kings*, the fifth game in the series, when it was around halfway finished. "They had some issues working on *The Settlers V*, and we were asked to help them out," he says. But Häuser wasn't a big fan of the direction the series had taken since *The Settlers II*. "The clear definition of *Settlers* wasn't there anymore. With *Settlers* and *Settlers II* it was more economy-based and an indirect way of controlling stuff; *Settlers III* and *Settlers IV* were more of an RTS game. I gave a lot of feedback regarding the *Settlers V* game design, but it wasn't my job to work on the game design itself. You cannot question everything when you join a team." Häuser's company also helped out on the reboot of *The Settlers II* at around the same time (see 'Evolution Versus Tradition').

> "I gave a lot of feedback regarding the Settlers V game design, but it wasn't my job to work on the game design itself. You cannot question everything when you join a team"
> **THOMAS HÄUSER**

Heritage Of Kings moved further in the direction of real-time strategy, foregrounding combat and switching to 3D graphics. Again it received mixed reviews, with Kieron Gillen in particular criticising the stripped-back economics in his *Eurogamer* review, saying it's "not really much of a *Settlers* game at all". Whereas previously critics had marked down the series for not changing the formula, now they criticised it for changing too much.

This prompted a rethink for *The Settlers: Rise Of An Empire* in 2007. Combat was toned down, and the road network from the first two games was reinstated, but the relatively basic economic system raised the ire of reviewers, with Dan Whitehead at *Eurogamer* saying that it was "simplified to an almost insulting degree".

There was a sense that the *Settlers* series had lost touch with its roots, so Ubisoft changed course again for *The Settlers 7: Paths To A Kingdom* in 2010. The economics system was beefed up, and overall the game took more inspiration from *The Settlers II* than from later entries. The changes were received favourably, with *Eurogamer* calling it a "worthy continuation of the series", and *GamesRadar+* dubbing it "an extraordinarily thoughtful and attractive game".

But it could all have been very different. Thomas Hertzler says that if he had retained control of Blue Byte, he would have taken the series in a radical direction after *The Settlers IV*. "After *The Settlers IV*, I don't think I would have had the guts to do another one just like it, tweaking a little here, tweaking

NORTHGARD

■ In many ways a fantasy version of *The Settlers*, *Northgard* sees a clan of Vikings fighting against the likes of wyverns, kobolds, wolves and other clans, but perhaps the biggest threat is winter. Shiro Games released the game on PC in 2019, and it was recently ported to PS4, Xbox One and Switch.

CHAMPIONS OF ANTERIA

■ This hybrid RTS/action RPG game from 2016 was originally meant to be called *The Settlers: Kingdoms Of Anteria*, but Blue Byte decided to drop the *Settlers* naming and release it as a standalone game. Although it started off as a *Settlers* title, the resultant fantasy action game is far removed from the series' origins.

» [PC] *Rise Of An Empire* received an expansion called *The Eastern Realm* in 2008. Set in the Far East, it introduced a monsoon season that interrupts farming and fishing.

a little there. The next thing would have been a change of venue, basically, possibly more related to environmental issues, real-world issues, possibly colonisation of Mars. Basically, turn *The Settlers*' underlying structure into something that you could call an eco-game. And not in a mad 'tree-huggers' way, but showing how certain things work together. You pollute something here, something happens there – cause and effect – and what do you do?"

Hertzler already had a working title for what would have been the fifth game in the series: *Space Settlers*. "And I had been working on that for probably a year or so before it became clear that I would not be involved in the next *Settlers* game," he notes. "Because with *Settlers IV*, I figured we probably should stop. We should take it into another direction. I felt, use the success and now build something that is, instead of medieval, it's modern day and you have to manage a modern society and make sure that they kind of step over whatever's coming next. The next ten years, 15 years, 20 years are going to be critical. And that was the case 20 years ago, as it is today. Today possibly even more so." ✱

The Settlers 2020

HOW THE SERIES IS RETURNING WITH AN AIM TO PLEASE OLD FANS AND NEWCOMERS ALIKE

The *Settlers* franchise has been mostly dormant since the release of *The Settlers 7: Paths To A Kingdom* in 2010. But to mark the 25th anniversary of the series in 2018, Ubisoft re-released the first seven games, as well as announced a brand-new entry, simply called '*The Settlers*'.

Volker Wertich, the designer of the original game and *The Settlers III*, has come back to direct the new title, which Ubisoft says "brings back the best, modernised elements from previous *The Settlers* titles, combining them with brand-new features and gameplay systems". Art director Edgar Bittencourt said in a video for fans that: "It's a stylised game, it's in the *Settlers* DNA, but this time we're going to go for full-power authenticity and believability. The characters will come in and work and will produce stuff, and you'll be able to see what they produce, their output and input piles, how things are running in the building."

One interesting aspect of the new game is how wild animals like boars, rabbits and deer fit into the ecosystem. Each animal will grow and eventually die, and each has a preferred habitat where they will breed more successfully. But boars are aggressive, eating crops and chasing after farmers, meaning you'll need to send hunters or soldiers to clear them out, while deer can provide leather as well as meat.

The latest title claims to have more buildings than any *Settlers* game before it, and there are also different ways to win, one of which is the 'Path To Glory'. For this, the player sets up a tournament, and sends a hero into the arena to face off against an opponent. Settlers from both sides gather at the arena to watch, and the audience gains a confidence boost if their hero wins, but loses confidence if their champion fails. Settlers with low confidence might become protestors and start a revolution against their leader. Thomas Häuser, director of *The Settlers II*, says he's pleased with how the game seems to be shaping up: "I'm looking forward for the next *Settlers* game, because I think they're moving in a good direction, moving back to some of the basic ideas." *The Settlers* was originally slated for release in autumn 2019, but last year it was delayed to a currently unspecified date in 2020.

DISSECTING DOOM

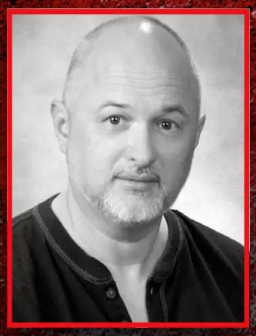
WHEN ID SOFTWARE RELEASED ITS SHAREWARE GAME DOOM IN 1993 NO ONE KNEW JUST HOW INFLUENTIAL IT WOULD BECOME. JOIN US AS WE CELEBRATE ONE OF THE MOST IMPORTANT FIRST-PERSON SHOOTERS OF ALL TIME WITH CO-CREATOR JOHN ROMERO, DIRECTOR, TOM HALL AND THOSE THAT HAVE BEEN INFLUENCED BY IT

WORDS BY ADAM BARNES, DARRAN JONES AND NICK THORPE

JOHN ROMERO

SCOTT MILLER

TOM HALL


ALEX MAYBERRY

AUBREY HODGES

Today's gaming landscape would be very different without the influence of id Software's *Doom*. While it certainly wasn't the first game to adopt a first-person viewpoint, let you run rampant around mazelike arenas or go head-to-head against like-minded players with a thirst for destruction, it's arguably the game that laid the groundwork for everything that followed. There are numerous reasons why virtually every single shooting game that followed in its gory wake was referred to as a '*Doom* clone' and not a '*Wolfenstein 3D* clone' – id's hellish blaster did everything right, from its meticulously designed levels, to its satisfying weapons and imaginative enemies. *Doom* felt like a perfect storm, a culmination of all the techniques that John Carmack and the rest of id's talented development team had created whilst working on games like *Hovertank 3D* and *Wolfenstein 3D*. For many, *Doom* felt like the second coming and it proved that brutally fast-paced action wasn't just found in arcades, it could be enjoyed on the very systems typically used to create spreadsheets and other mundane tasks. *Doom* helped make PCs exciting, and even Bill Gates realised the game's appeal and starred in a video to help promote the release of *Doom95* on Windows 95 as Microsoft helped pushed Windows as a serious options for gamers.

Doom's gargantuan success, along with the continued interest in 3D gaming, saw plenty of other developers racing to market with their own takes on the popular game. Chief among them was id itself, which continued to push the first-person template with *Doom*'s very own sequel in 1994 and later with *Quake*, which ushered in proper 3D graphics, but there were plenty of other contenders to *Doom*'s throne, including *Heretic*, *Hexen*, *Star Wars: Dark Forces*, *Duke Nukem 3D* and countless others. Some games shamelessly copied *Doom*, while others went out of their way to improve on id Software's formula, whether it was by adding ever more over-the-top weaponry, or using a completely different setting, from dark fantasy/horror to familiar Earth-based adventures to separate their games from the Martian carnage of id's shooter. Some of these games were converted from *Doom*'s own engine, while others were built from the ground up in order to best fulfil the visions of the teams behind them.

Even today, the love and respect developers and gamers have for *Doom* within the industry runs deep, with even co-creator, John Romero recently returning to the game in order to create a brand-new set of levels for his expansion, *Sigil*. *Doom* was like a lit match to tinder and it ignited a passion in gamers that is only shared with the very greatest videogames today. We're delighted, then, to be able to look at id Software's game in a little more detail with both John Romero and Tom Hall and examine both its design and the aspects – from modding to the many bizarre systems that can run it – that have made *Doom* so memorable. ▶

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CREATING DOOM

TOM HALL ON DOOM'S CREATION, THE DOOM BIBLE AND WATCHING THE GAME HIT CRITICAL MASS

On its release, *Doom* felt like the culmination of a perfect storm. It featured cutting-edge technology, was freely available to play (thanks to a shareware distribution model) and it delivered an exciting arcade-like experience that few other games could match. Tom Hall, *Doom*'s director, explains how it all came together and when the development team realised just what it had created.

What did directing *Doom* involve?
Well, in early development and early id, [John] Carmack did mainly the engine; [John] Romero, the tools; me, design; and Adrian [Carmack] did art. [...] After doing many games together... we did *Commander Keen* one through three in two-and-a-half months. Romero also blasted out some levels near the end. Same for *Commander Keen* four through six, where he had more time and did great levels. Same for *Wolfenstein 3D*. Same for *Doom*. However, as documented in *Masters Of Doom*, that broke down with creative differences and such.

But generally, once the concept was agreed upon, [I was] creating a small story/theme, coming up with weapons (Carmack came up with the BFG, though, only he knew he could draw something that big!), world map, layout, coming up with monsters... I fought for non-bipedal monsters in *Doom*, so we got Cacodemons and Lost Souls – *something* needed to not come unsurprisingly walking at you on the ground. Then levels and ideas like 'nextcol scrolling' which allowed scrolling textures kind of for free.

Tell us about the *Doom Bible*...
I made it because I'd heard that TV shows have a 'show bible' that dictates what you can and can't do in the world, with characters and other details, so that seemed appropriate. Previous games we kind of just 'did'. I'd draw up a monster or idea for something, and Adrian would draw it brilliantly. For a game like *Rescue Rover*, with lots of puzzle elements, I did a design doc. But we were trying new stuff with making 3D models and getting them into the computer in rotations with a video camera. So there were more details and tech and tools for this game, so it seemed the time to make a more centralised repository of project info.

What elements never made it to the final cut?
Most obviously, the characters. We'd decided to have four-player multiplayer or co-op, so I imagined those four characters were sitting around a break room, playing cards, then a demon bursts in the room and it 'kills' whoever isn't playing. You are alone playing, it kills three. If it is four-player, no one dies.

Also I had a character that was just ahead of you called Buddy, telling you scraps of info, giving you direction, but most importantly, giving you dread for what you are about to head into, like in *Aliens*. James Cameron shows you all the colonists' transmitters are in the same place, so you have dread the whole way approaching it. It just gives a deeper experience to what you are going through. Also, like *Aliens*, you'd finally see Buddy, only to have him ripped in half by the Barons Of Hell, showing how dangerous they were, like ripping Bishop in half.

What improvements do you feel *DOOM* made over *Wolfenstein 3D*?
Of course, fully texturing the environment. Lighting, getting an even better set of progressive weapons and multiplayer. The best thing to me was going full dark. No game to my knowledge had, however briefly, just turned the lights off. That was terrifying. *Doom* was 'scarydarkfast' and that was really unique. *Doom* and *Doom II* had that. I didn't feel all three parts again until the most recent *Doom*.

You must have some interesting stories...
I remember almost making a game for Paramount for *Aliens* (Adrian was super-excited

AFTER DOOM

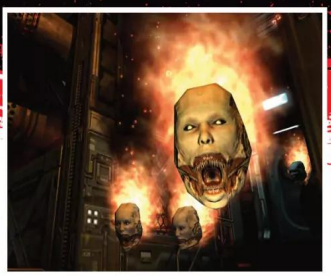
SELECTED SEQUELS AND SPIN-OFFS THAT FOLLOWED IN DOOM'S WAKE

DOOM II: HELL ON EARTH

RELEASED: 1994
id Software's sequel not only featured a vastly improved multiplayer experience, but it also added more ambitious levels that were far larger in design and scope than *Doom*'s and greatly rewarded exploration. Other additions included new enemies (plus the return of many favourites) and the Super Shotgun (essentially a meaty double-barrelled shotgun).

DOOM 64

RELEASED: 1997
This N64 exclusive was developed by Midway Games and is set after *Final Doom*. It features a brand-new weapon, a laser called the Unmaker, along with 32 exclusive levels and two new monsters, the Nightmare Imp and Mother Demon. A remaster is currently in the works for Nintendo's Switch.



DOOM 3

RELEASED: 2004
There was a ten-year wait for id Software's third *Doom* game so John Carmack and his team could create a story-focused game with cutting-edge technology. It's essentially a reboot of the original game, with a strong focus on horror, something which divided critics at the time of release.

» [PC] Things really crank up on *Doom*'s second episode, with enemies often attacking in large groups.

» [PC] It's easy to remember *Doom* as dark and gloomy, but it has plenty of sections where the action takes place outside.

» [PC] For all its weaponry, few things are as satisfying in *Doom* as punching a demon in its face.

» [PC] Thy Flesh Consumed was the fourth and final chapter of *The Ultimate Doom*, and it's bloody hard!

about it, he loved HR Giger's work) instead of *Doom*... but in the end, we wanted to do our own thing. That decision turned out to be a big vector-change in id's future!

How important was shareware to *Doom*'s overall success?

At the time very important, as everyone could 'try before you buy'. And *Doom* was really something at the time, so they were hooked.

When did you first start becoming aware of *Doom*'s popularity?

Beyond sales, it was the way it crept into the public zeitgeist. Not just a *Wired* cover or awards, but we went to watch a demo scene showing, and one of the demos stopped for a second and printed, full-screen, 'WE LIKE *DOOM*'. Friends were always playing it, everyone played it after work. Later, people came up to me and said, 'I failed a semester because of *Doom*,' and, 'My parents got so mad at me for playing *Doom*.' It was an answer on *Jeopardy*. If someone [isn't] into videogames, to this day, they usually know *Doom*. It's part of our culture now.

How does it feel to be part of the team of developers that created one of most influential games of all time?

It was a profound privilege to work with such amazingly talented developers. First, we worked together at night, as [we] snuck into the Gamer's Edge department at Softdisk. Then we spent virtually every waking hour together for id's first three years. We were developers, we were friends. We did amazing games together and we pioneered a genre, the first-person shooter. What designer gets to do that? It was an honour to get to define the founding concepts, the simple but essential building blocks of a genre that are still used today. *Doom* was our fifth game in that genre, and was the culmination of all we'd learned. I remember asking [John] Carmack, as it was being released, how he thought the game turned out. He said, 'Better than we thought it could.' ▶

DOOM

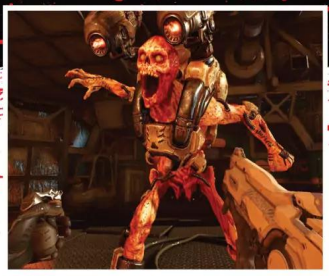
RELEASED: 2016

First announced in 2008 as *Doom 4*, it went through an extensive development cycle, before being restarted in 2011. id Software's second reboot is a blast to play, thanks to its fast pace, large number of weapons and its brutal Glory Kills that allow you to effortlessly rip through your opponents.

DOOM PINBALL

RELEASED: 2016

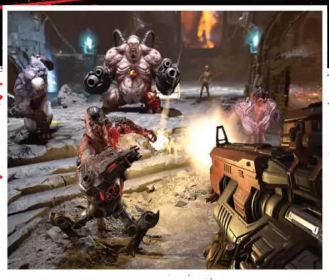
This excellent pinball adaptation is part of Zen Studios' *Bethesda Bundle* and has a table that's themed around the 2016 reboot. The structure of the table is very good, with plenty of missions, great ball physics and lots of references to the original games. It also includes tables based on *Skyrim* and *Fallout*.



DOOM VFR

RELEASED: 2017

This companion piece to 2016's *Doom* features convincing, inventive use of virtual reality and lets you rip apart demons by teleporting into them. It's an incredibly fast-paced game, matching the ferocity and pace of the original *Doom*, but falls apart in the story department compared to the 2016 reboot.



DOOM ETERNAL

RELEASED: 2019

The latest *Doom* is another excellent entry, and features more Glory Kills, wall-climbing and dash moves, plenty of new enemies and new destructible demons. A new multiplayer mode, called Invasion, is also included, where players can invade the games of others and fight them as Hellspawn.

DESIGNING DOOM

JOHN ROMERO EXPLAINS WHY DOOM'S EXCELLENT LEVEL DESIGN HELPED IT STAND APART FROM ITS PEERS ON RELEASE

DESIGNER COMMENTARY

JOHN ROMERO LOOKS BACK AT HIS ICONIC FIRST STAGE

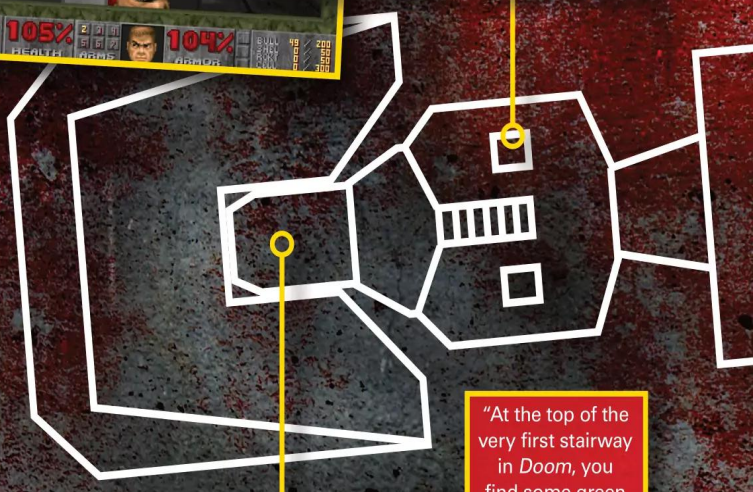
There are numerous reasons why *Doom* holds up today, from its impressive use of lighting to create atmospheric locations, to its memorable enemies and satisfying selection of weapons. Perhaps one of the best reasons why id's shooter has stood the test of time so well is due to its exceptional level design, which becomes all the more impressive when you realise that there are absolutely no sections of the game where objects like bridges and arches cross over each other. "Well, it was much easier to not have full 3D at that time," explains John Romero, who created *Doom*'s levels. "If you look at a level from the top-down you'll see if there's a surface, there is nothing above or below it. It's very clean. We were concerned with delivering the best-looking world at a good framerate on 386 33mhz PCs in 1993."

Another aspect of *Doom*'s design that works so well is the flow it offers while playing. Some sections drop jump scares on you (something that would become far more prevalent in *Doom 3*) where others offer you vicious gauntlets of enemies that need to be dispensed with before you can progress. You never really know what to expect in *Doom*'s stages, with the flipside of that approach meaning there was a lot for John to think about. "There's a lot to consider," the developer muses when we asked about what needed to be taken into account while creating *Doom*'s varied levels. "You want to have a sense of what the overall design is, then support that with some landmark architecture and interesting views to other sections. Are you hiding enemies, then surprising the player? Are you allowing the player to explore for a while before they get into combat? Or do you want to constantly dribble out enemies? There's really an unlimited amount of design ideas you can pursue with *Doom*'s limitations."

Another aspect that many forget about *Doom* is the sheer amount of exploration that is offered during play. John's level design constantly encourages the player to not only explore their surroundings in order to find missing keys and seek out additional ammo and guns, but also to look for unusual designs in the map's layout in the hope of discovering one of *Doom*'s many hidden secrets that could reward you with useful caches to help with your fight against the horde. "I think secrets are an additional fun vector to include in any game," continues John. "Those secrets can really help you out, and if you're desperate you will absolutely press every single wall! I still put all kinds of secrets in every game I make. With my recently released *Sigil* (*Doom* levels), I made sure there were at least four secrets on every level."

Perhaps the biggest testament to *Doom*'s design is just how well the first stage still plays. It introduces you to all the techniques you'll need to use as you make your way through the game, and highlights just how well-crafted id's classic is. "E1M1 was the last level I created so I could pour all the design language developed for the game so people would be most impacted there," says John. "It probably took a couple weeks to get streamlined." It remains one of our favourite stages from the game, and we were keen to know what other maps hold a special place in John's heart. "That's tough," he says. "E1M1 is nice and simple, and the level many people remember. E1M3 had the best secrets, and was the first backtrack design in *Doom*. E1M7 was big and had lots of backtracking. I loved E2M5 because it was huge, and a challenge to live through. E2M2 was the first crate maze in a 3D game. E2M8 was scary and [had] the introduction of the Cyberdemon. It's so hard to choose! Well, I'll just pick E1M7. It has a lot in it." ▶

"This is a hidden switch I added in v1.9 to open up [a wall] so players can access the secret area easier, and find the other secret entrance as well. It's also a favourite switch in deathmatch."

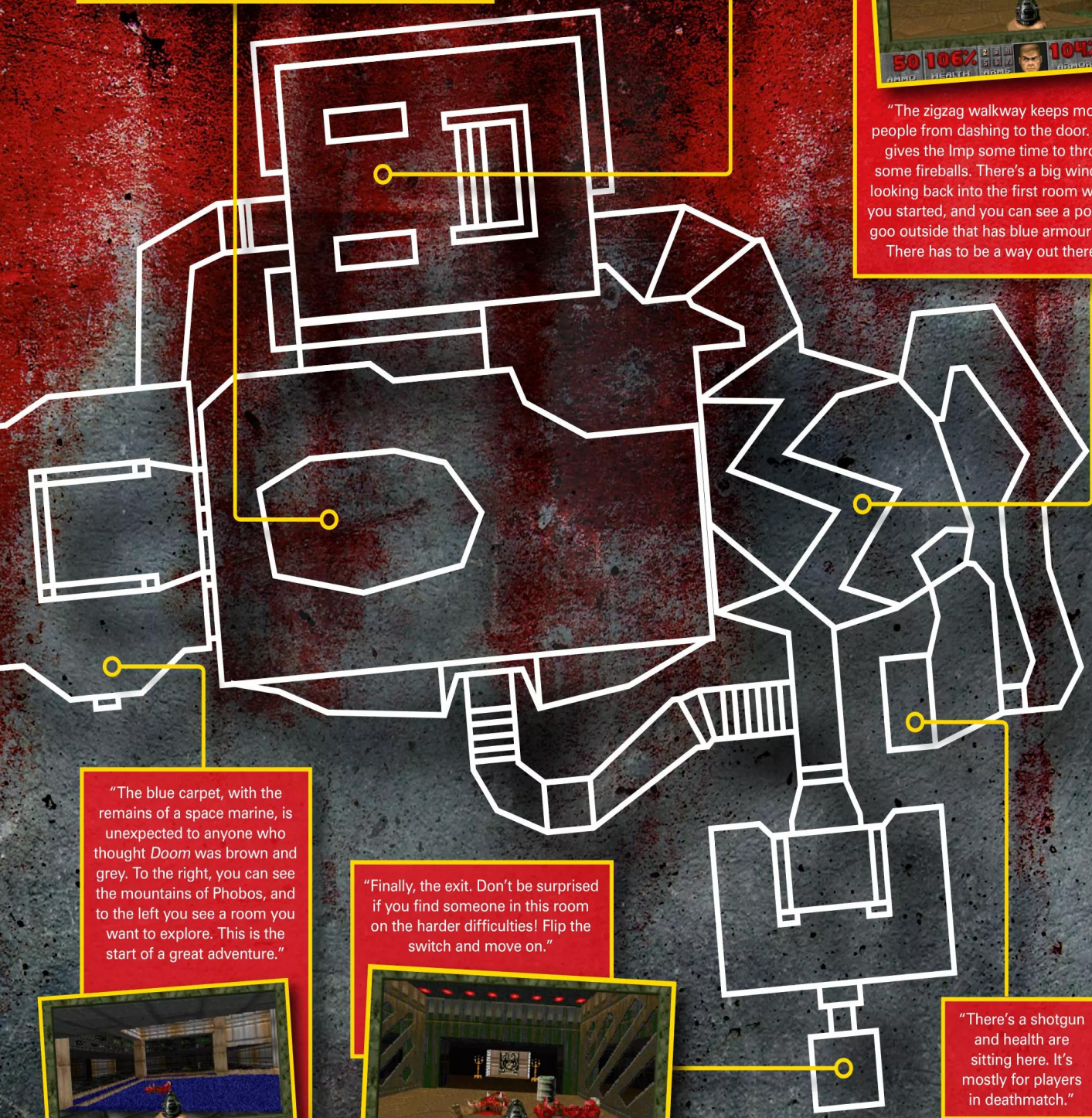


"At the top of the very first stairway in *Doom*, you find some green armour that will help you beyond the first door."

"The outdoor courtyard is an important part of the level because it shows players that they can, in fact, get outside somehow, if only they would search for it. The blue armour in the pond is very powerful, and in deathmatch it's the best way to get the higher frag count. You can also get a rocket launcher and scoop up a lot of rockets out there in deathmatch. This is one of the very few secret areas in *Doom* that is accessed by two secret doors."

"This room is your second run-in with enemies. There's plenty of space to move around, so don't worry too much. [Two] guys flanking the doorway as you come in could surprise you. Look around and you'll find some health."

"The zigzag walkway keeps most people from dashing to the door. This gives the Imp some time to throw some fireballs. There's a big window looking back into the first room where you started, and you can see a pond of goo outside that has blue armour in it. There has to be a way out there."



"The blue carpet, with the remains of a space marine, is unexpected to anyone who thought *Doom* was brown and grey. To the right, you can see the mountains of Phobos, and to the left you see a room you want to explore. This is the start of a great adventure."

"Finally, the exit. Don't be surprised if you find someone in this room on the harder difficulties! Flip the switch and move on."

"There's a shotgun and health are sitting here. It's mostly for players in deathmatch."

DEMONS OF DOOM

A QUICK GLANCE AT ANY OF DOOM'S BESTIARY OF BADDIES IS ALL IT TAKES TO IMMEDIATELY KNOW THAT YOU'RE LOOKING AT AN ENEMY FROM THE GAME, BUT WHAT MAKES THESE CREATURES SO ICONIC? AND DID THEIR DESIGN HELP TO MAKE DOOM STAND OUT ALL THE MORE?

Around the time of *Doom*'s release, there were – generally speaking – only two categories that games fell into: the swords and spells of Tolkienesque fantasy, or the laser rifles and interstellar spaceships of sci-fi. *Doom* stood apart from that, delving instead into the catacombs of Hell for a repository of otherworldly and demonic beasts to battle and it was all the better for it. "The demonic theme comes from our *Dungeons & Dragons* campaign Carmack ran up to 1991," reveals John Romero, who goes on to explain that within this campaign, "the world was destroyed by an infinite amount of invading demons from hell. That seemed like a cool idea for a game."

It was a cool idea for a game and it also became the pervasive concept surrounding *Doom*, and from there the idea was further explored. "Definitely *Aliens* was an inspiration for the feeling the player should have when surrounded by demons," says John, who adds that "*Evil Dead 2* was the inspiration for the shotgun, chainsaw and dark humour." But *Doom* was careful with its enemy progression, starting first with basic human-like enemies – that were in fact zombies – before introducing a greater sense of the underworld the deeper into the bowels of Hell the player went. The Imp, the Baron Of Hell, the Cacodemon… each new beast was revealed gradually and purposefully, introducing the player to new, increasingly horrific designs as well as the varied ways not only in which they fight but also how they must be fought. Interestingly, before they made it into the final game, *Doom*'s iconic enemies were first created using clay models. "It allowed us to scan a 3D model quickly," continues John, "but the huge drawback was when we changed the position of the arms and legs for animation. The clay tore and had to be remodelled. That was the end of clay modelling." Despite the issues those clay designs created, it allowed the team at id to demonstrate tremendous creativity. This originality and uniqueness meant that every one of *Doom*'s Hellspawn etched itself on the player's mind: they were completely new, and when pit against the player in planned, scary reveals became all the more haunting and unforgettable as a result. "The Baron is memorable because he's a tank and looks more like a classic demon than anything else in the game," suggests John. "The Cacodemon is memorable because he looks great and was a brand-new thing that no one had seen in games at the time." ▶

FANTASTIC BEASTS...

THE FOOTSOLDIERS OF HELL

FORMER HUMAN

Termed the 'Trooper' or 'Zombieman' by the *Doom* community, these undead soldiers are the initial enemy you'll encounter in *Doom* and by far the least threatening. They quickly become the fodder of the game, thanks in large part to their terrible aim and low damage.

FORMER SERGEANT

While an upgrade on the basic Trooper enemy, the Sergeant carries a shotgun and is therefore a greater threat at closer range. Many of the levels use this as a tactic, having the zombie appear from behind secret walls that open in close proximity to the player.

IMP

The first of the 'true' demons to appear in the game, the Imp is the perfect opportunity to practice the run-and-gun combat style that is so crucial to surviving in the game. Their slow projectiles might be a bother at first, but by the end they're barely a concern.

SPECTRE

The Spectre is almost identical in function to the Demon, except that it appears as nearly invisible. Since the PlayStation and N64 couldn't handle the invisible effect of the DOS version, these had to be handled differently. We've included the *Doom 64* sprite, simply so you can see it.

DEMON

Since this familiar piggy is only capable of a close bite, the beast's strategy is to use its speed to quickly close the distance with the player. Despite its ape-like look, the Demon's legs were actually modelled on a *Jurassic Park* Dilophosaurus (the spitting one) toy.

LOST SOUL

They might not be grand in stature, but Lost Souls are still a pain to have to deal with. They don't have a sound effect when the player is detected, for example, the only signal being their iconic hiss that they make as they begin the fast-paced charge towards the player.

...AND HOW TO FRAG THEM

THE DEMON-SLAYING TOOLS OF THE TRADE

CACODEMON

Having since become the poster boy of the series, the Cacodemon certainly looks like a visual concept original to *Doom*. It was, however, partly inspired by the Astral Dreadnought on the front cover of *Advanced Dungeons & Dragons' Manual Of The Planes* released in 1987.

CYBERDEMON

First introduced as a boss, the Cyberdemon is by far and away one of the biggest threats you'll face in *Doom*. It has the biggest pool of health of any enemy in the game, fires three rockets at a time and is immune to splash damage: in other words, it's the ultimate beast to down.

BARON OF HELL

These Minotaur-like beasts are when things really start to heat up in the game, since these brawlers can not only take a lot of abuse but their ranged fireball is much quicker than the Imp's and far more damaging.

SPIDERDEMON

Later referred to as The Spider Mastermind to give it the significance it deserves, the Spiderdemon is the final boss of the game and the instigator of the Hellspawn invasion of the moons of Mars. While it is an abomination of demon flesh and technology, the Spiderdemon was actually going to have a secondary magical attack that was cut from the game.

KNUCKLEDUSTER

As the melee attack, this is the only weapon in the game that you'll always have by your side. It can be effective in certain situations, though, and when combined with the Berserk power-up it can pummel through many of the game's enemies.

CHAINSAW

It's hard not to feel like a badass when wielding one of these, but while it might feel cool it does mean getting up close and personal with some of Hell's toughest creatures. Certain enemies, however, such as the Cacodemon, are vulnerable to the constant pain it deals.

PISTOL

The basic weapon of any space marine is pretty much the only tool at your disposal when taking on the likes of the recently rerisen zombie fodder you'll face at the start of *Doom*, but very quickly you'll outgrow its limited damage and slow rate of fire.

SHOTGUN

The shotty adds a bit of range and a bit better damage to your arsenal, but it is naturally well suited to closer range combat due to the multiple shells it fires. As a result, it's pretty much your go-to weapon when demons come a-running.

CHAINGUN

This is the weapon that essentially replaces the pistol since it feeds from the same ammo supply. However, because of the high rate of fire, it's very useful when facing enemies, with higher chances of pain since it'll stun them completely.

ROCKET LAUNCHER

Long-ranged and explosive, the rocket launcher is the essential tool for wiping out large groups of weaker enemies or getting a strong pre-emptive strike on tougher opponents. Since it fires a slowish-moving projectile, you'll need to predict enemy movement.

PLASMA GUN

The high damage of the Plasma Gun is counteracted by its erratic accuracy at longer range, but in the right hands it can be quite the devastating tool. Interestingly, when running out of ammo with another weapon, the game's code prioritises this weapon above all else.

BFG9000

Notoriously standing for 'Big Fucking Gun', the BFG is the ultimate weapon in *Doom* thanks to the high-damage capabilities that a blast of its plasma ball can do. Naturally its ammo is extremely scarce, so you'll want to make sure you only make use of its in dire situations.

EVOLVING DOOM

DOOM HAD EVERYTHING IT NEEDED TO SHAKE UP THE INDUSTRY, INCLUDING TWO CRUCIAL DECISIONS SURROUNDING HOW THE GAME WAS SHARED

» [PC] Some DoomWADs, such as *Hell Revealed*, were notorious for their difficulty, which often thrust players in the deep end.

Even now, all these years later, you can still find *Doom* available for download in its shareware form on countless corners of the internet. It's perhaps not surprising considering this free version of the game was so widespread, since it allowed players to experience just a little bit of what the game had to offer. *Doom* was the hot topic in gaming at the time of its release, everyone knew about it, and id Software's decision to make a whole chapter's worth of action available to play for free at a time before demos were such a de facto part of gaming... well, that helped get the conversation going. "When *Doom* first came out, I initially mistook it for another version of *Wolfenstein*, which I never cared for much," says Alex Mayberry, who has worked as a designer and producer on games like *Diablo III*, *Quake II* and *Kingpin: Life Of Crime*. "Eventually, though, I downloaded the shareware version and gave it a try. I remember when the game loaded how taken I was by it. There was a *moment* for me; it was the first time a game had put me into a virtual world where I achieved immersion in it." And so, rather than just rumours of a groundbreaking first-person shooter coming from word of mouth or the screenshots printed in the latest magazine, gamers could actually get hold of the game and experience it for themselves.

There's a smartness about the shareware version, too, essentially unlocking everything except for two of three chapters. All the weapons, all the monsters, all the secrets that are available as part of the paid-for game are available in the shareware version, meaning that players had plenty to see – the only limitation coming at the end of the first chapter. It was tantalising, too, the slow build up of weaponry and the Hellspawn to use them against them was subtle, yet noticeable. At the end of the locked version, the player faces off against a pair of Barons Of Hell, a fearsome reveal and a tough fight to boot. The reward? A portal that should – in theory – take the player to the Shores Of Hell and episode two, but instead they're met with a darkened room and an anticlimactic death. Always leave them wanting more, they say, and *Doom*'s shareware version did just that.

But while the shareware version of *Doom* meant the game was widespread, this perhaps wasn't the reason it has maintained such a fanbase over the years. id Software had seen what modders had achieved with the closed engine of *Wolfenstein* and were inspired, ultimately leading to a decision at the start of *Doom*'s development to make the game – and the engine powering it – as open to modders as possible. The result was DoomWADs, which leveraged the .WAD file structure of the engine to allow players to make their own changes to the game, even complete overhauls.

"My first attempt at WAD editing was to simply change something in the game," recalls Alex, whose career as a game developer began with modding *Doom*. He talks of how his first simple change – to swap the first shotgun

THE BEST DOOM WADS

HUNGRY FOR MORE DOOM? DOWNLOAD THESE

DOOM THE WAY ID DID

A noble idea, this one, what with its creators wanting to release a trio of episodes that are akin to the original *Doom* experience with the same style and gameplay design. What is interesting is how relatively new this WAD is, since it came out in 2012; to put that into perspective, *Duke Nukem Forever* released in 2011.

ALIENS TC

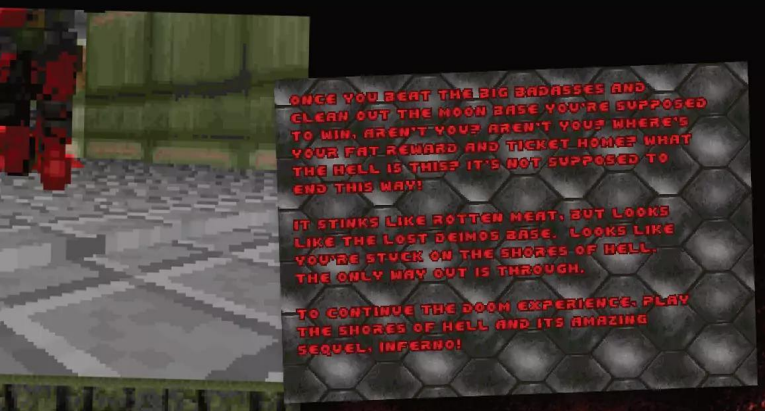
At the time, this total conversation of *Doom* set in the *Aliens* universe was getting about as much hype as id's own sequel, and rightly so. The attention to detail is incredible, while the tangible sense of fear and horror that is so essential to the *Alien* franchise even surpasses *Doom*'s own shock horrors.

ICARUS: ALIEN VANGUARD

The first WAD release of TeamTNT, *Icarus: Alien Vanguard* can perhaps be seen as the beginning of something great. This historic modding team was well known among the DoomWAD community, and its 1996 release was a sign of the dedication it would later go on to bring to the *Doom* modding scene.

CHEX QUEST

Perhaps the most unexpected use of the WAD scene is *Chex Quest*, which totally converted the gore and the guts of *Doom* into something that's a lot more wholesome and friendly. Of course, this was all in aid of an American cereal brand, but there's no overlooking how smart this WAD was.


ONCE YOU BEAT THE BIG BADASSES AND CLEAN OUT THE MOON BASE YOU'RE SUPPOSED TO WIN, AREN'T YOU? AREN'T YOU? WHERE'S YOUR FAT REWARD AND TICKET HOME? WHAT THE HELL IS THIS? IT'S NOT SUPPOSED TO END THIS WAY!
IT STINKS LIKE ROTTEN MEAT, BUT LOOKS LIKE THE LOST DEIMOS BASE. LOOKS LIKE YOU'RE STUCK ON THE SHORES OF HELL. THE ONLY WAY OUT IS THROUGH.
TO CONTINUE THE DOOM EXPERIENCE, PLAY THE SHORES OF HELL AND ITS AMAZING SEQUEL, INFERNO!

» [PC] The opening level of *Eternal Doom* – created by Alex Mayberry – starts with the player bursting into danger from a cryo chamber.

in the game to a plasma rifle – was revelatory. "From that point I was instantly hooked on building levels," he adds. Alex became embedded within the WAD community long before it was even a community, and from there his involvement in the modding scene grew. "I joined together with a group of other WAD-makers and we formed Team Eternal. We met frequently in chat rooms on CompuServe, and together we created the first 'TC' – Total Conversion – of *Doom II*, called *Eternal Doom*."

To fans of DoomWADs, *Eternal Doom* is well known. It was one of the biggest WADs available for the game both in terms of size and popularity, alongside the likes of *Aliens TC*, *Hell Revealed* or *Memento Mori*. And while passionate fans took to *Doom* editors to build their own versions in the shape of *Doom* and create experiences that complement the base game for like-minded fans to enjoy, that wasn't the end of the story. As with any game sustained by modding, there's a vibrant community still playing DoomWADs to this day. "The game has definitely aged," says Paul DeBruyne, "but it hasn't gotten old because there's always something new to experience." Paul's earliest DoomWAD credit was in 1998 but his most recent is 2018, proving there's been a sustainable life to the game entirely because of modding. "id was smart to embrace the modding community in the early days, rather than trying to shut it down. The community grew to a critical mass and it's never really slowed down. When id released *Doom*'s source code – which was basically unheard of – it more or less ensured that *Doom* would continue to get new features and be ported to contemporary operating systems, which makes the community around the game really resilient and self-sufficient even after 25 years. I'm not sure we'll ever see this degree of trust or ownership placed on a game's community again." ▶

ETERNAL DOOM

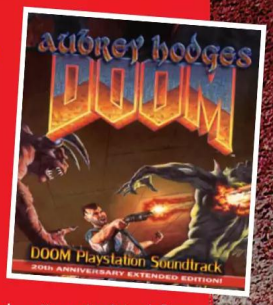
Perhaps one of the most famous 'megawads', *Eternal Doom* was expansive in its extension of the base *Doom II* game with 32 levels and a completely new soundtrack to go with it. Many of the creators of this megawad went on to work professionally within the games industry as designers.

SIGIL

As an unexpected surprise to celebrate *Doom*'s 25th anniversary, John Romero himself returned to *Doom* development to create *Sigil*. With its nine levels that focus on the occult, it is considered the spiritual successor of the third episode of *Doom* and begins right where the original ended.

MAESTRO OF MAYHEM

AUBREY HODGES ON CREATING DOOM'S SOUNDTRACK FOR CONSOLES



» You can buy Aubrey's *Doom* soundtrack and many others by visiting aubreyhodges.bandcamp.com.

Let's start at the beginning: how did you come to work on the *Doom* soundtrack?
id and Midway had decided to team up to bring *Doom* to console and a team from id visited Midway San Diego and toured the facility. They asked to hear some of my latest work and in the middle of listening to one of my tracks they told me to pause. At that point they told me that they needed me to create the music and sound design for *Doom* on the PlayStation. I was both humbled and a little nervous, but I was determined to justify their faith in me. I started on the project later that same day.

Where you familiar with the original PC soundtrack?
Oh yeah, everyone played *Doom* back then! I loved what Bobby Prince had created and the fun energy the tracks brought to the game.

How long did the soundtrack take to create and what difficulties did you face?
I completed all the music and sounds in roughly four months. I had to overcome some serious limitations but, ironically, those very issues became a part of what makes the score so memorable and unique. The CD audio was not going to be able to be used during the game because the levels were streaming from CD. This meant I was only able to use the onboard MIDI sampler for music. Additionally, I only had 500K of memory for all music and sound effects. 300K was allocated to sound effects and 200k for music. (20K for the MIDI data and 180K for the sample data). In today's terms, this is miniscule. In addition, the development software for the PlayStation that was delivered to me from Sony was only in Japanese, which I do not understand. So I had to experiment with what all the button symbols meant and keep notes.

Did you intend to make your soundtrack more brooding and foreboding compared to the PC original?
In the beginning, not so much. I originally went in a similar stylistic direction to the original. However, the memory restrictions for sample storage and other issues forced me to think 'outside the box' and experiment. The more I developed my techniques and tested them with gameplay, I became convinced that the same heightened level of stress and tension could be achieved with this style of 'music' rather than the high energy rock/metal. Granted, it does not provide the sense of 'fun' and energy that the original approach provided. Instead, the dark ambient approach makes up for that by adding to the unworldliness and alien aspect of the locations themselves. I thought it was a decent trade-off given the more dark and sinister version of the game we were crafting.

How did you mix things up for the 20th anniversary version?
This version features extended ultra long arrangements of all the level tracks, new versions of the *Main Theme* and *Finale* tracks and eight all new bonus tracks created using the same techniques used 20 years ago. This album is over five-and-a-half hours of music!

CLONING DOOM

BEFORE A GENRE WAS CREATED, FIRST-PERSON SHOOTERS WERE KNOWN BY THEIR MEDIA-GIVEN NAME OF 'DOOM CLONE'

» [PC] Pixel Titan's *Strafe* was released in 2017 and wears its *Doom* influences on its bloody sleeves.

» [PC] *Duke Nukem 3D* is one of the better shooters that followed in *Doom*'s wake and pushed the genre in its own distinctive way.

» [PC] Raven Software's *Heretic* uses a modified version of the *Doom* engine.

You know when a game has truly made an impact when all those that follow in its footsteps are, whether fairly or not, compared to the predecessor.

Even to this day any action RPG with a top-down viewpoint is called a '*Diablo* clone', for example. While *Doom* perhaps didn't start the first-person shooter – those laurels go to its big brother, *Wolfenstein 3D* – it was special enough to kickstart a genre thanks to its approach to technology, game design and visual flair. "Let's be clear: I think *Doom* is the greatest achievement in the game industry," highlights Scott Miller, whose own games would go on to be bundled in among the other so-called '*Doom* clones' of the time. "It was innovative on so many fronts, its BSP-based 3D engine, streamlined high-speed gameplay, built-in support for the mod community, LAN multiplayer for both deathmatch and co-op. It was the ultimate marriage of tech advancements and killer gameplay."

But Scott was actually aware of the splash that *Doom* was about to make in the industry, even ahead of the game's release. His company, Apogee Software, had published and produced *Wolfenstein 3D*, and so Scott had a close relationship with the team at id Software. "I was able to visit id's offices several times during *Doom*'s development and got to see the game at various stages," he adds. "I knew they were onto something massive." This gave Scott and Apogee an advantage that many didn't have, as well as the understanding that Apogee needed to 'bust ass' if it was going to keep up with *Doom*.

It was a sensation that many developers will have felt at the time. *Doom* was so compelling, so game-changing that to ignore what id was making possible would have been foolish. *Doom* released in December of 1993, and yet already in 1994 there were a slew of games emulating its approach, likely thanks to the early heads-up that *Wolfenstein 3D* had given developers. Some wanted to do their own thing in the same space, while others wanted to improve on what id Software had produced. "That's why we decided to focus on games with interesting characters, like Duke and Lo Wang," says Scott. "We also added many other elements to our games to stand out, like interactivity, slopes, humour, really wacky weapons and exploding walls. We knew we couldn't keep up with id when it came to technology, so we had to beat them in other areas."

NOTABLE DOOM CLONES

GREAT ALTERNATIVES YOU NEED TO EXPERIENCE

DUKE NUKEM 3D

Arguably the most notorious of *Doom* clones, 3D Realms brought a bigger personality to the *Doom* experience. This meant a recognisable and humorous character, over-the-top weaponry and a few moments very deserving of its 18 rating. Famously, the series didn't end up at the heights that started with this FPS, but back when it was released it was one of the better 'clones'.

STAR WARS: DARK FORCES

It's true that no one could overlook the inspiration that *Dark Forces* came from, but there were numerous additions that really pushed the FPS forward for the time. Greater emphasis on environmental puzzles, the ability to jump and swim, and even graphical enhancements all helped LucasArts' shooter stand on its own – though it was still tarred with the '*Doom* clone' brush.

MARATHON

Often overlooked in lieu of *Halo*, Bungie's first FPS actually goes a long way of demonstrating some of the style and capabilities of the team that went on to redefine combat. It was much more cinematic than *Doom* was and actually allowed for y-axis aiming – a genuine innovation at the time. But since it was exclusive to Mac computers, it didn't garner the audience that it definitely deserved.

It didn't matter what the subject matter or the gameplay style was, if you produced a first-person game in the years that followed *Doom*, it was branded a clone. "I thought '*Doom* clone' was idiotic and ignorant of this new FPS category," says Scott. "So I never used that term and corrected all the press who used it. Every 3D game that came out after *Doom* was called a '*Doom* clone'. The press wasn't smart enough back then to recognise that a new genre was emerging, the FPS genre."

The impact it had was phenomenal, Apogee even rebranded the company to pair up its own FPS games with a new name that demonstrated the significance of the technology: 3D Realms was the name, producing *Blood*, *Shadow Warrior* and *Duke Nukem 3D* quickly to ride the wave that *Doom* was forming. "I wanted to be coming out with the best ones as soon as possible," says Scott. "The bigger risk was not taking *Doom* on!"

Comparisons to *Doom* were inevitable: there was nothing else like it at that point, and with no language to help express how a similar game might play, the press, Usenet users and early internet pages had to draw references to the only thing they knew. *Duke Nukem* had managed to carve its own niche out of the new genre, but still it was compared to *Doom* as a clone. The shift in terminology didn't really start until 1996 and the release of *Quake*, at which point 'first-person shooter' started to enter into the industry's dictionary. By 1998 after other developers had released their own impressive FPS games, the two terms had switched in their usage and by the early Noughties the phrase '*Doom* clone' was all but forgotten.

Until now. There's no destroying the heritage of a game like *Doom*, and now that indie development has given rise to the popularity of neo-retro gaming, the term '*Doom* clone' has once again returned. Games like *Dusk*, *Strafe* or 3D Realms' own *Ion Fury* all wear the *Doom* inspiration with pride. Heck, there's even a '*Doom* clone' tag on Steam these days. ▶

THE TERMINOLOGY OF DOOM

Many significant games come with their own unique terminologies that become widespread, but few have had the same impact as *Doom* did in how it got people talking. '*Doom* clone' is the obvious example, which was used to easily and effectively explain how a similar game played by using *Doom* as a reference point.

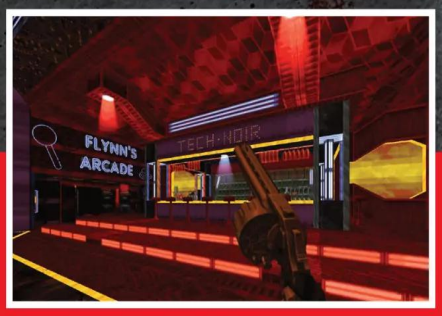
But then there's terms like 'WAD', an acronym of 'Where's All The Data?', which was the default format for package files used in *Doom* and became shorthand for 'mod'. 'Deathmatch' was also born from *Doom*'s pioneering multiplayer mode, as is 'frag' – meaning a point scored for killing another player – both of which are synonymous with multiplayer gaming to this day. Even the concept of 'speedrunning' started with *Doom*, the fast-paced, skill-orientated gameplay well suited to competitively beating a game as fast as possible, and it built up a strong community of speedrunning gamers around that.

ZERO TOLERANCE

There's no doubting the technical achievement behind *Doom*, but there's certainly cause to claim *Zero Tolerance* an even more impressive feat. Replicating the first-person combat on the Mega Drive is certainly worthy of praise, and while it didn't quite match the speed or quality of id's breakthrough shooter, it did at least provide *Doom*-like gameplay to an audience that perhaps wouldn't have had access to it.

HERETIC

It's perhaps hard to claim *Heretic* (and its follow-up, *Hexen*) as *Doom* clones, since the game has such close ties to id Software and John Romero, and actually runs on the same engine. Many of the weapons in the game are actually reworkings of *Doom*'s own arsenal of firepower, in fact. Even so, the occult-fuelled gameplay and novel additions to the engine still make *Heretic* a *Doom* clone worth playing.



ION FURY

In more recent times, the revival of *Doom* clones has been brought on by a growing distaste for modern FPS games and a renewed love of the classics we used to love. One recent example of this is *Ion Fury*, 3D Realms' tribute to its own Build engine games. It is reminiscent of the fast-paced, *Duke*-style gameplay, and even uses 2D sprites for enemies. It's a modern *Doom* clone, though Scott wouldn't want us to say that…

DOES IT RUN DOOM?

ID'S ICONIC GAME HAS APPEARED ON COUNTLESS SYSTEMS, AND VIRTUALLY ANYTHING WITH A CPU

» [Jaguar] The Atari Jaguar conversion provided the basis for many of the mid-Nineties console versions of *Doom*.

» [PlayStation] On Sony's platform, *Doom* received some enhancements like coloured lighting effects.

***Doom* will always be most heavily associated with the DOS PC gaming scene of the early Nineties, and that's justified – but really, it was a phenomenon that spread far beyond that platform.** That was by design, as the game was developed on high-end NeXT workstations before being ported over to DOS. The game spread across the computer world through 1994, gaining official ports to Mac OS, Linux, OS/2 and other operating systems.

Doom was a bit of a beast to run in its day – although a 386 CPU was required, a 486 was recommended. Players saddled with an older processor would often have to use the screen-reducing border option to add some speed to their experience. As a result, for a brief time in the Nineties before the advent of *Quake*, *Doom* was the game that PC enthusiasts could point to as justification for any claims of format supremacy. All of the 'next generation' consoles of the era received conversions, but many of them struggled to live up to the splendour of the original. Most of the console versions were missing at least some of the levels, and pretty much every version missed some enemies. Some of the versions lacked music, while others had it downgraded. Even the excellent PlayStation version had to make compromises, though it made up for them by including many of *Doom II*'s levels and an all-new soundtrack.

As time went on and official conversions of *Doom* dwindled, id Software released the source code for the game in 1997. Fans took on the challenge of adapting the game to other formats, which led to some truly bizarre ports. Fans were much more ambitious with the hardware they targeted, often shooting for either woefully underpowered gaming hardware, or sufficiently powerful non-gaming hardware. Where developers had once struggled to replicate *Doom* on state-of-the-art dedicated gaming devices, it has become a game that you can happily run on calculators and printers. That the game has achieved such a level of ubiquity is a testament to the fame that *Doom* has achieved.

WAIT... *THAT* RUNS DOOM?

SOME OF THE MOST BIZARRE AND IMPRESSIVE CONVERSIONS OF ID'S CLASSIC SHOOTER

SNES

This was the original 'impossible port' of *Doom*. The game required the SuperFX 2 chip and still required several cutbacks, but it was a miracle that it worked at all. It's a pretty respectable version, with levels based off the original DOS versions and enemies that don't appear in other console versions.

PRINTER

Security researcher Michael Jordon got this particular hack working in 2014, as a means of showing off a serious security flaw in Canon's Pixma printers. While this particular demonstration saw the device running *Doom*, it could also have been used to spy on documents being printed or create a network backdoor.

Q&A THE KINSIE

THE OWNER OF IT RUNS DOOM (ITRUNSDOOM.TUMBLR.COM) TAKES US INTO THE WORLD OF DOOM PORTS

Did you first encounter *Doom* via the PC version, or one of the ports? What did you make of it?
I first discovered *Doom* when the shareware release came out on PC and my dad bought it home from work. I was very much a console-head at the time (to be fair, the SNES was *really* good!), so I largely put it aside for a couple of years until *Doom II* arrived and all the high-quality mods and elaborate total conversions really started hitting, at which point I was hooked.

Why did you decide to catalogue *Doom* ports?
There used to be a website that did pretty much the same thing (*It Plays Doom*, I think it was called) which ultimately dropped off the internet completely. I thought it was a bit of a missed opportunity for there to be no such thing, so I decided to more or less revive it myself using the Tumblr service instead of taking the time to hack together my own website. It seems to have worked out decently enough!

Why do people decide to run *Doom* on such odd devices as printers and ATMs?
Even relatively simple and low-power modern devices are typically much more computationally powerful than the average PC was in 1993, which makes it a lot easier. In addition, if you're, say, a security researcher messing around with a device that isn't supposed to run user-supplied software (like a printer or ATM), then putting a famous 3D action game on there is a hell of a lot more attention-grabbing than making it print 'Hello World' to the screen. So there's admittedly a big novelty factor to a lot of these ports. Combine that with homebrew coders with a desire to play the game (and its legion of mods) on the latest and greatest game systems like the Switch, and you get a whole lot of ports with a wide variety of reasons to exist.

Why do you think *Doom* specifically gets ported so often, compared to other classic games?
Wolfenstein 3D was specifically written for a very specific MS-DOS development environment, and this caused a lot of problems further down the line when ports to other platforms were demanded. *Doom* learned from this by being a lot more portable, being written largely in system-agnostic C with support for multiple operating systems (DOS and NeXTSTEP) right from the word go. (I'd highly recommend Fabien Sanglard's *Game Engine Black Books* if you're interested in the specifics of *Wolfenstein*'s and *Doom*'s programming.) The official source code release in 1997 opened the doors to further development and documentation, and the last little bits of friction have since been smoothed out by the community, resulting in a clean, well-documented, mature codebase to play with. Which is great, if depressingly uncommon among classic games.

Here's the big question: what is your favourite example of *Doom* running on an unusual device?
It's a hard question, but I think my favourite one I've seen was the folks who ported *Doom* and MAME to lumpy old Nineties digital cameras that used a shared operating system. It's that wonderful combination of 'patently ridiculous' and 'actually probably pretty playable' that gets me. As far as homebrew ports I've actually played myself, the Nintendo DS port was a great little combination of playable and portable that brilliantly dedicated one of the two screens to the automap, showing actual attention to the system's unique functionality beyond just getting the game running.

CHAINSAW

George Merlocco's 'Painsaw' is a creation that makes the list more for being a brilliant novelty than a technical marvel. The game itself is running on a Raspberry Pi Zero, using the Chocolate Doom source port. This, along with an LCD screen, was embedded into an Echo Junior toy chainsaw with a bloody new paint job.

POCKET CHIP

Okay, we're tooting our own horns here. Back when this tiny all-in-one Linux computer launched in 2016, our former sister magazine *Gadget* challenged us to demonstrate its retro gaming potential. We quickly got it running a variety of games including *Doom*, and ended up gaining a little bit of social media attention.

COMMODORE 64

Yes, you can play *Doom* on the greatest of all the 8-bit computers – but only if you have a SuperCPU, and don't mind playing in four colours with a single-digit framerate. This port was designed by AmiDog and was more useful as an experiment to test a MIPS recompiler, rather than an attempt to make a playable game.

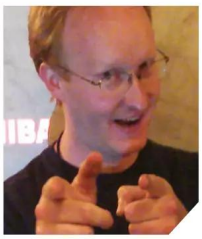
SONY'S GAME-CHANGER

Few consoles have had as strong an impact on the videogame industry as the *PlayStation* which will soon be celebrating its 25th anniversary. *Retro Gamer* looks at how it ignored conventions, proved to be Sony's saviour and created one of gaming's most important brands

Words by David Crookes

» Colin Anderson is one of the musicians that harnessed the PlayStation's audio power.

» Michael Troughton is one of the coders that worked on *Destruction Derby*.



» Benjamin Heckendorn is a console modder that owns the super-rare 'SNES Station'.

On its very first day of sale in Japan on 3 December 1994, Sony sold 100,000 PlayStation consoles. When the console was finally released in the United States the following September, it shifted the same amount again but what made jaws truly drop is that the PlayStation went on to become the first console in history to surpass 100 million sales just six months short of its 10th anniversary.

By that time, the PlayStation brand had firmly established itself in Europe, Australia and other parts of the world, too. It had also blown the Nintendo 64's 33 million sales out of the water and decimated Sega which could only muster fewer than 10 million units for the Saturn. That latter figure was a particular triumph for Steve Race, president of Sony Computer Entertainment of America. At E3 in Los Angeles in 1995 after Sega announced its console would cost $399, Steve walked to the podium, uttered "$299" and left with cheers ringing in his ears.

If anything, Steve's quip had been a stroke of marketing genius and Sony certainly proved rather adept at carving out a market for its fledgling console in an industry long dominated by Nintendo and Sega. Sega itself had battled against Nintendo to smash the near-monopoly it once held, and Sony took them both on with arguably greater success. "We had a very clear idea and plan on the hardware and platform in terms of appeal and aspirational positioning," Steve tells us. The company played a blinder.

For most of its years, however, Sony – founded in 1946 – was not known for being interested in videogaming. It had achieved great success with the Walkman throughout the Eighties and its 8mm Handycam camcorder was very popular. But Sony's negative approach to games was such that engineer Ken Kuturagi ended up secretly developing the SPC700 sound chip for Nintendo which used it in the SNES. When Sony finally awoke to gaming's possibility, it initially sought to do so in partnership with Nintendo – a decision that caused it to be stung (check out the SNES Station boxout over the page) but ultimately gave it a golden route to success.

And boy, did Sony desperately need it. After all, it had not long struggled to convince consumers of the merits of Betamax over VHS; the company's reputation for televisions also appeared to be fading, and it was still reeling from the fallout over singer George Michael's protracted attempts to free himself from a contact with Sony which did it no favours at all. There was much disquiet, too, over the purchase of Columbia Studios which had left it with a £1.98 billion loss. Ken Kuturagi was allowed to go ahead and create a Sony console rival and the 'Father Of PlayStation' proved something of a saviour for the electronics manufacturer.

The first battle was to set it apart from its rivals. "The problem was that Sony's products were geared for a 16-year-old's dad or uncle and we had no cache with our key demographic profile," Steve Race explains. Cue strange television adverts containing game footage that got tongues wagging, if only for the confusing tagline '[E]NOS Lives'. It would transpire that E meant 'ready' and NOS referred to the US launch date of the 9 September. "We were flying the Jolly Roger relative to the games industry and corporate Sony," Steve explains. "And if you look at the first box, there was no Sony logo on the package, either."

Not that everything went entirely smoothly, particularly between Sony's Japan and US divisions. Sony in Japan had been working with third parties such as Namco – which created an arcade-perfect port of *Ridge Racer* – and insisted all of the resulting games would be released in the US. America, meanwhile, wanted to change the console's name.

"I felt it was downmarket and skewed too young – what 16-year-old 'plays'?" Steve quizzes. "But turns out we could have called it 'dog poop' and it would have sold. As for third parties, we went out and hired

> ***"We were flying the Jolly Roger relative to the games industry and corporate Sony"***
> STEVE RACE

» **Crash Bandicoot** Sega had Sonic. Nintendo had Mario. And Sony had a character called Crash Bandicoot but while it didn't become an official mascot for the PlayStation, the initial exclusive kickstarted a run of games that eventually appeared on the likes of the Xbox, Game Boy Advance, GameCube and across subsequent console generations.

» [PlayStation] As one of the longest-running PlayStation-exclusive franchises, *Twisted Metal* has seen millions of players tearing around in modded vehicles while lobbing weapons at their opponents.

» [PlayStation] Not all games were aimed at adults. *Croc* was one of many child-friendly games.

KILLER APPS

Five exclusive games that defined the system

PaRappa The Rapper

1 Masaya Matsuura's quirky rhythm game kicked and punched its way into the minds of gamers in 1996 before spawning a spin-off – *Um Jammer Lammy* – and a sequel *PaRappa The Rapper 2*. More than that, the button-tapper set the tone for scores of other popular games based on music.

Gran Turismo

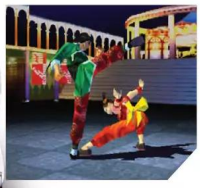
2 The collective *Gran Turismo* series – which has never driven away from the PlayStation since it debuted in 1997 – is a massive PlayStation-exclusive franchise, with more than 80.4 million units sold over its 20-plus years of life. It's known for its superb graphics, accurate driving physics and huge number of licensed vehicles.

Ridge Racer

3 Motoring over to the PlayStation from the arcades, *Ridge Racer* was a launch title that truly helped to sell the console. With impressive 3D cars, drifting mechanics, glossy presentation and a blistering soundtrack, it showed that Sony's console was able to replicate coin-op play – there was even a mini version of *Galaxian* to play.

ISS Pro Evolution

4 This exclusive kicked *FIFA* off the pitch, and it was promptly heralded as the best football game ever made when it was released. As a faithful and intelligent simulation of soccer, matches could be punishing but it set the genre on a new course of realism that scored highly with players.



Tekken 3

5 *Tekken* had already impressed when it was released on the PlayStation in 1995 but this second sequel introduced a new cast, sold 8 million copies and firmly established itself as one of the console's – and gaming's – greatest ever fighters, capping off an amazingly accomplished trio of games.

» [PlayStation] Hideo Kojima's stealth game *Metal Gear Solid* can actually be traced back to *Metal Gear* on the MSX2 computer, but the *Solid* series which emerged in 1998 will forever be closely aligned with PlayStation.

"Nintendo was appealing to a very young audience and we were appealing to that kids' older brother"

STEVE RACE

experienced professionals with strong reputations as key management and we put those reputations on the line, convincing the CEOs of companies such as Activision and EA to come over. There were no special concessions like Sega gave on royalties so we could tell everyone it was a level playing field."

Those publishers were also interested in Sony's use of CD-ROM as opposed to cartridges. The PlayStation teams would point out that CDs could be produced at a lower cost and without the long waiting lines associated with cart production. It also helped that the Saturn wasn't Sega's finest machine – "It plain sucked," says Steve Race. "Nintendo was technologically behind, too," he continues. It was time for Sony to hammer home the point in all of the territories it was targetting.

In Europe, this meant spending £20 million ahead of the 32-bit console's first Christmas and Sony did so very cannily. It placed adverts, not solely in the specialist gaming and computing press, but in more than 40 fashion, music and style magazines including *The Face*, *Ikon*, and *Dazed & Confused*. Since Sony Computer Entertainment wanted young adults to engage in gaming, it also firmly pushed the industry away from the bedroom image of old by consciously placing PlayStation consoles in the wild – notably at nightclubs, celebrity parties and music festivals – where cool people would play and influence others to do so the same.

"Nintendo was appealing to a very young audience and we were appealing to that kids' older brother," Steve says. "Young kids always want to emulate older kids and somehow that was lost on Nintendo, so we were in fact able to poach their key demographic by just being PlayStation. It was a huge marketing mistake by Nintendo which was also far too insular (something like 75 per cent of all software sales for the Nintendo platform was made by Nintendo). We were the prettiest girl at the dance and available. Oh and Sega was a lost cause."

» **Resident Evil** Originally developed on the PlayStation, gamers were introduced to Chris Redfield and Jill Valentine in a groundbreaking survival horror that made up in scares what it lacked in acting prowess. Played from a third-person perspective and blessing the eyes with prerendered backgrounds, it would define this popular genre.

SNES Station

Before the PlayStation, Sony intended to work with Nintendo

Before Sony developed what we know today as the PlayStation, it worked with Nintendo in order to develop a CD-ROM add-on for the SNES. It also sought to supplement that with a Sony-branded console based on the SNES that could play 'Super Discs' as well as cartridges.

The device didn't make it past the prototype stage. Nintendo felt the terms of the agreement went against its interests and it struck a deal with Philips instead. The move prompted Sony to go it alone but just what was that prototype like?

Console modder Benjamin Heckendorn got his hands on one. "As a prototype, it was pretty far along," he tells us. "There were a few bodge wires on the PCB to fix mistakes but that wasn't uncommon for the era. The case tooling was very good and the power buttons had a very 'Sony-esque' complex mechanism. The cartridge slot was also a separate piece of plastic – since the Japanese/US SNES carts are different shapes, they clearly planned to just swap out the piece."

Even so, he says the system "would have been a dog". "It was basically just a SNES with CD-ROM storage attached," he continues. "A game cart was also needed to work because it contained the boot BIOS along with 8K of battery backup save RAM and 512K of game load RAM. This is where game data from the CD-ROM would have been copied to and then executed to play games. But the cart did not contain any coprocessor or expansion chips so it would have severely limited what games were capable of."

As if to underline those credentials, Sony got itself a roster of instantly recognisable games, the gameplay of which would be easily guessed from a simple glance. So while it had launched the PlayStation with a limited number of games – the UK, for instance, had *Battle Arena Toshinden*, *Kileak: The Blood*, *NBA Jam: Tournament Edition*, *Rapid Reload*, *Ridge Racer*, *Street Fighter: The Movie* and *WipEout* – it was enough to convince the gaming world of PlayStation's intentions. More than that, Sony would not shy away from licensing games that would have had Nintendo flinching.

This was a platform, after all, which had titles as violent as *Grand Theft Auto* or frightening as *Silent Hill*. Developers also dearly wanted to get involved. Colin Anderson, musician and producer at Rockstar, said the PlayStation let him eschew chiptunes for a CD soundtrack. "The PlayStation cemented CD soundtracks as the standard throughout the industry pretty quickly after it launched," he tells us. "*GTA* probably wouldn't have established the CD soundtrack as a centrepiece of the game if the

» **Syphon Filter** Making its debut late into the original PlayStation's life, *Syphon Filter* was often in danger of never seeing the light of day. But its mix of third-person stealth shooting and a good number of puzzles (think *Metal Gear Solid* and *Tomb Raider*) caught the imaginations of players and led to a further five titles.

"The PlayStation cemented CD soundtracks as the standard throughout the industry pretty quickly after it launched"

COLIN ANDERSON

» **Oddworld** "Follow me," implores the game's main character, Abe, and so many gamers did, with Lorne Lanning directing a debut that harked back to the 2D platformers of old while infusing it with a fresh next-generational twist. The franchise eventually spread its wings: the third game switched mid-development from PS2 to the Xbox.

» **Silent Hill** Survival horror was taken to fresh and frightening heights with *Silent Hill* and the PlayStation ramped up the tension but not for the reasons you'd expect. Instead, the game's fog, snow and a dark foreboding atmosphere masked the console's graphical limitations but it helped to attract a legion of fans.

PlayStation hadn't made chip music more or less obsolete when it did."

Graphics artists and programmers were impressed, too. "Although 3D had taken off on the PC with games such as *Doom* and *Wolfenstein*, PlayStation brought full 3D gaming to the masses for the first time," says Michael Troughton, one of the programmers of *Destruction Derby*. "From a development point of view, if you wanted to create a 3D computer game you had to write your own polygon rasterisation and 3D maths code which was difficult and time consuming but the PlayStation opened that up with its custom graphics processor and geometry engine in hardware."

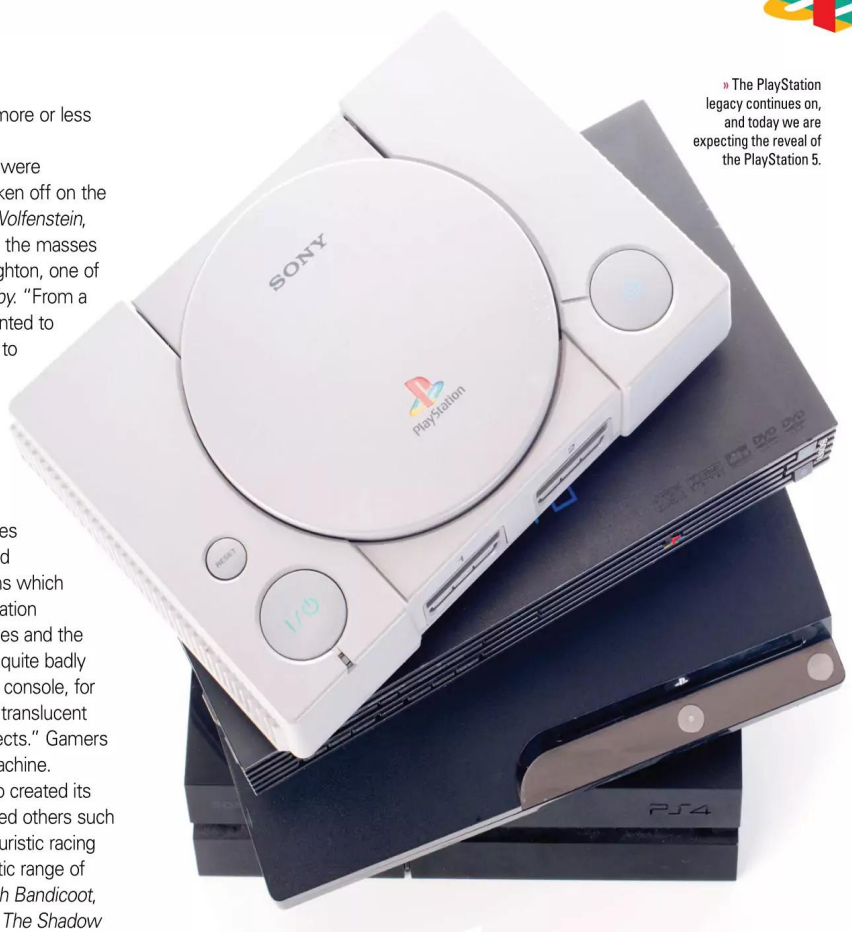
Developers were finding themselves creating games on the PlayStation and porting them across to other platforms which worked in Sony's favour. "The PlayStation ended up with the better quality games and the Saturn versions of titles would suffer quite badly in translation," says Michael. "Sega's console, for example, was unable to simulate the translucent sprites used for smoke and other effects." Gamers spotted this and flocked to Sony's machine.

Sony Computer Entertainment also created its own development studios and acquired others such as Psygnosis which produced the futuristic racing game *WipEout*. It published an eclectic range of games including Naughty Dog's *Crash Bandicoot*, Revolution Software's *Broken Sword: The Shadow Of The Templars* and *Twisted Metal*. *Final Fantasy VII* was taken under its wing – the game was originally earmarked for a Nintendo release but developer Squaresoft needed the space available on CD-ROMs and jumped ship.

In this sense, though, Sony was sticking with convention. "Never in the history of videogames has a console developer been void in making first-party games," says Steve Race. But it also consolidated Sony's position and allowed it to steer the types of games it wanted on its platform. "We'd have been fools to build a highway and not put our car on it."

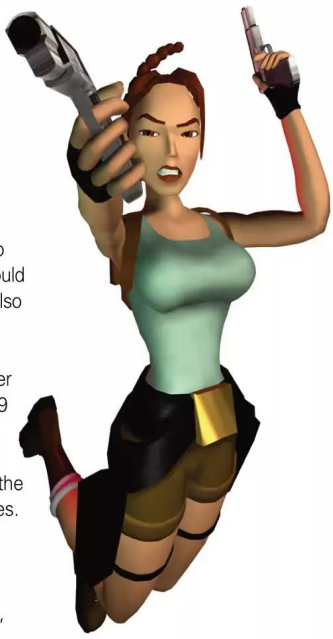
The money made from "highway toll charges" – the licensing fee charged to third-party software companies – proved vital. "Frankly, we lost money on each console sold for the first couple of years," Steve explains. "The cost of each disc was pennies and packaged was under a dollar so if, as a developer, Sony could amortize the development cost, the incremental profit was 90 per cent."

That said, piracy was rife. Blank discs were cheap and gamers found a way to burn games on to them and share. Even so, it likely helped: at the very least a pirate would have to buy a PlayStation and it would continue to spread the word about the console. Since developers were knocking them out at a rate of knots, there were plenty of games to get stuck into. Impressive polygon visuals, mature content and games that could last as long as 100 hours providing talking points. A homebrew scene would even flourish thanks to special Net Yaroze development units further setting it apart. Meanwhile, a Platinum range of games was launched in January 1997 and allowed titles that achieved sales of more than 400,000 worldwide after a year to be sold at a lower price.



» The PlayStation legacy continues on, and today we are expecting the reveal of the PlayStation 5.

The magazines played their part as well, particularly the official ones. The *Official UK PlayStation Magazine*, for instance, came with a popular demo disc – a first for console magazines – and it undoubtedly helped the publication to a staggering circulation that topped out at 453,571 – making it the world's bestselling videogame magazine. Having a taster of games each month, in turn, boosted game sales and allowed players to experience a far wider range of titles than they would otherwise have been exposed to in the shops. It also granted a distribution outlet for Net Yaroze games. PlayStation was pushing boundaries.



All of these things, together with ongoing clever marketing such as the TV ad, *Double Life*, in 1999 gave the PlayStation the finest of starts. It was a console that kept on giving thanks to its power, allowing titles such as *Tomb Raider* to shine and the likes of *PaRappa The Rapper* to define new genres. There were excellent tools and documentation for developers and CD-ROMs allowing for larger games. Most of all, there was a concerted effort to look players in the eye and grant them respect, something which put PlayStation on the industry map and has kept it there. ✱

THE IMPACT OF HALF-LIFE

We follow the journey that began with Gordon Freeman taking the train to work to explain how Valve's revered series revolutionised game design and set the standards for the titles we are playing to this day

Words by Paul Walker-Emig

We all knew *Half-Life* was something special as soon as we stepped into the shoes of Gordon Freeman riding the train into the heart of the Black Mesa Research Facility back in 1998. At that time, we were still accustomed to thinking about the spaces that games – and first-person shooters in particular – took place in as levels, an artifice providing the backdrop for gameplay to happen. Black Mesa was different. This was an *environment*. You weren't dropped straight into a corridor with a gun in your hand and an enemy to use it on standing in front of you. You were playing as a person arriving at work. Valve took the time to show you a workplace in operation, with people going about their daily business, and gave you some time to inhabit its protagonist as a normal person doing their job before everything went to hell.

"Gordon, and by extension the player, is there for the *whole* incident," says Adam Engels, project lead on *Black Mesa*, the recently completed remake of the original *Half-Life*. "You kick it off, you fight through the facility, you kill the big bad at the end. You are not dropped into someone else's problem, and you have context for the whole adventure. I think, even to this day, it makes *Half-Life* stand out.

"The facility itself seems not only huge but active," continues Adam, reflecting on the worldbuilding that made *Half-Life* feel so revelatory when he first encountered it. "Like the whole facility is operating just out of view. It helps what might be a cheesy sci-fi fantasy feel grounded and real."

» [PC] The enigmatic G-Man hides in plain sight, an omniscient observer of Gordon's progress throughout Black Mesa and beyond.

As Adam suggests, *Half-Life*'s opening was indicative of the approach Valve took to designing the game at large. There was a concerted effort not to create a string of videogame levels that you would take on one after the other, but instead create a consistent place that felt believable and try and situate the player in it as a real space as much as possible. Valve built a world that responded to you, where the scientists going about their business in the labs, break rooms and corridors of Black Mesa would acknowledge your existence and react to the things you do (even to the point of pissing them off by exploding their casserole in the microwave). It's a place where exposition isn't presented to you on a platter, as if you are the centre of the universe, but where overheard conversations provide small details, the environment is used to help tell the story, and those with a keen eye are rewarded with unsettling appearances of the nefarious G-Man lurking in the periphery. This kind of approach is now relatively commonplace, but at the time it represented a huge shift in the way we thought about games.

» [PC] Instead of prerendered cutscenes, the team at Valve opted to have events play out in-engine through Gordon's eyes.

For David Speyrer, who is now a developer at Valve and worked on *Half-Life 2*, the first *Half-Life* had a profound impact. "My first exposure to *Half-Life* was playing the 'day one'

leaked build – but don't judge me, those were different times!" David recalls. "My immediate reaction was, 'This is amazing and important! I would love to make games like this.' I found the seamless integration of storytelling and gameplay so compelling and transporting; I had never inhabited a videogame protagonist so completely. Jay Stelly and I had made games together all through high school and college, and he'd gone on to do loads of wonderful work on *Half-Life*. He'd been encouraging me to apply to Valve, but I was busy and happy living in Boulder," David continues. "Once I played 'day one' and realised what they had accomplished with *Half-Life*, I didn't need any more prodding. I came up for an interview on the day that *Half-Life* went gold and happened to take the team photo during the shipping party. It was a memorable day. Back then, I considered *Half-Life* important enough to change the course of my life."

The sense that *Half-Life* represented a fundamental shift in the way games would be designed was felt across the industry. Jonathan Chey, who was working on *System Shock 2* at Looking Glass Studios at the time, remembers the terror he felt when he came to realise what Valve had achieved.

» [PC] Gordon isn't seen too far from his trusty HEV (Hazardous Environment Suit), which helps him traverse hostile areas.

"I had a terrible sinking feeling when I first played *Half-Life*," Jonathan remembers. "How the hell were we going to compete with this? It redefined what was possible with a first-person shooter – the frenetic gameplay and wafer-thin worldbuilding of the past was gone in one stroke. Black Mesa felt like a real place populated with something other than just mindless enemies to be gunned down. It evolved the first-person shooter genre into something entirely new, it demonstrated the power of in-engine storytelling and it pushed forward the state of the art in terms of weapon design and enemy behaviours. It's hard to believe what an incredible statement it was."

» [PC] Gordon inadvertently causes the Resonance Cascade, which kickstarts the whole bloody mess at Black Mesa.

The in-engine cutscenes Jonathan references were integral to the ethos of what Valve was trying to achieve with *Half-Life*. Situating you in the world meant making a commitment to never taking you out of it. "Gordon resonated because he *became* the player," Adam argues. "Because he does not talk and because you never have control taken away from you, it is easy to see yourself *as* Gordon, not as a person controlling someone else." By keeping you in control at all times and having narrative events happen to you as a player who is moving through the space where those events are happening, rather than a character in a cutscene, or a piece of text between stages, *Half-Life* avoided the disjuncture that the games that came before it subjected you to. After *Half-Life*, others began following Valve's lead.

"I think the most enduring legacy of the *Half-Life* franchise is the continuity of experience, weaving through action, narrative, puzzles, downtime and vistas while never breaking the first-person perspective," David reflects. "Every time I experience what I think of as a 'train ride' in a first-person game, in which the player is taken on a linear journey through a bunch of environmental spectacle, I feel like I'm seeing the legacy of *Half-Life*."

Another area where *Half-Life* delineated itself from what came before was in the behaviour of its enemies. More often than not, enemies in the games that preceded *Half-Life* would do one of two things: run straight at you without any regard for their own safety, or stand fixed in one spot, robotically shooting at you until you took them down. In *Half-Life*, things were very different. The marines that show up to lock down and wipe out any evidence of what happened at Black Mesa after you've spent some time battling the iconic *Alien*-esque Headcrabs, Vortigaunts and other assorted alien creatures, were a particular revelation to players accustomed to the dead-eyed dumbness of videogame enemies, showcasing an ability to work together and respond to what you were doing. They would retreat and take cover, force you out from hiding with grenades and flank you. That the idea of marines as an elite force of trained soldiers was

HALF-LIFE'S LEGACY

THE GAMES THAT HALF-LIFE SPAWNED

PORTAL

Valve's fantastic comedy puzzle game began life as *Narbacular Drop*, an indie game developed by students who were taken on by the company. The game jettisoned the idea of a princess trying to escape a castle and set it in the *Half-Life* universe instead, in part to allow the small team to use assets from *Half-Life 2*.

COUNTER-STRIKE

A game that's had a huge impact on multiplayer gaming, esports and streaming, among other things, *Counter-Strike* began life as a *Half-Life* mod. Valve, having picked up on the building hype around the beta, took on developers Minh Le and Jess Cliffe, and they finished and released the full version of the game under the studio's banner.

TEAM FORTRESS

The *Team Fortress* series has been fertile ground for experimentation for Valve, as well as a huge success. *Team Fortress Classic* was originally used to promote *Half-Life*'s SDK and *Team Fortress 2* has been a successful guinea pig for the now-common phenomenon of microtransactions, to give just one example of its many innovations.

» [PC] The military soon turns up at the Black Mesa facility, but not to help out…

» [PC] The gunplay in *Half-Life* is excellent, building on and evolving the action established in PC classics such as *Doom* and *Quake*.

» [PC] The series walks the line between sci-fi action and body horror. This poor scientist has been mutated by an alien Headcrab.

being realised (albeit in a rudimentary way) in the way they behaved in-game was mind-blowing, and forced the games that came after to place far more focus on enemy AI that would act in more interesting ways and present more engaging challenges to the player.

Jonathan reveals that, though the team was late in development, the innovations that *Half-Life* made were significant enough that Looking Glass Studios felt compelled to try and incorporate some of its lessons into *System Shock 2*. "Although *System Shock* had already established itself as something distinct from the *Doom*-style run-and-gun shooters in terms of its commitment to worldbuilding and simulation, *Half-Life* showed us how to blend some of those ideas with more accessible gameplay mechanics," he explains. "The controls were simple, but the world and challenges in it were not. *System Shock 2* was not a *Half-Life*-style game – it was slower, more free-form, contained RPG mechanics and differed in many other ways – but it drew (late) lessons from what we saw in *Half-Life*. Although we didn't have the development resources or the time to reproduce the kinds of things we saw in *Half-Life* on *System Shock 2*, we, along with every other developer, knew that we'd have to reach that bar in the future.

"I think every FPS made since *Half-Life* has been extensively influenced by it," Jonathan continues, speaking of the broader influence of the game. "It made developers pay attention to level-building as something more than just constructing combat arenas. It showed how to use in-engine animated sequences to tell a story without breaking out into prerendered cutscenes, and it demonstrated how more complex enemy behaviours, animation and audio could result in deeper combat experiences."

Not many games have had the kind of far-reaching impact that *Half-Life* did, but what makes *Half-Life* so special is that this series didn't settle for changing the shape of gaming once. It did it twice.

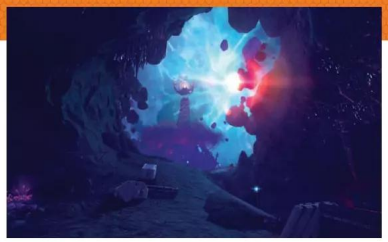
Half-Life's story had left the potential for a sequel open, with plenty of questions

> **"I THINK EVERY FPS MADE SINCE HALF-LIFE HAS BEEN EXTENSIVELY INFLUENCED BY IT"**
> **JONATHAN CHEY**

DAY OF DEFEAT

Day Of Defeat is another game that began life as a *Half-Life* mod that, yet again, Valve decided to snap up. Released in 2003, it is a multiplayer World War II shooter that takes a *Battlefield*-like approach, in that it focuses on objective-based gameplay and teamwork. A Source engine remake, *Day Of Defeat: Source*, followed in 2005.

BLACK MESA



A stunning reimagining of the original *Half-Life* made by Crowbar Collective, with Valve's blessing, *Black Mesa* is faithful to what was great about the original, but isn't afraid to make tweaks where needed. Most notably, the infamously bad Xen chapters from the original game have had a huge overhaul.

» [PC] A memorable section from *Half-Life 2* has Alyx introduce Gordon to her robotic pal, Dog, by playing fetch with it using the Gravity Gun.

» [PC] You frequently team up with members of the resistance, along with Alyx Vance, throughout *Half-Life 2*, making you feel like you're part of a collective.

» [PC] Commanding Antlions against the Combine forces using Pheropods added an element of strategy to *Half-Life 2*'s action setpieces.

PLAYING WITH SCIENCE

GETTING TO GRIPS WITH THE GRAVITY GUN

USER GUIDE

The gun's primary fire is used as a kind of punt, knocking objects out of your way. The secondary pulls objects towards you, which can then be fired.

QUANTUM NAMING

The Gravity Gun's official name is the 'Zero Point Energy Field Manipulator'. 'Zero Point' is a real term taken from the field of quantum mechanics.

BULLETS AND BALANCING

Part of what makes the Gravity Gun so appealing is its versatility. It can be used to solve puzzles as effectively as it can be used to take out enemies in combat.

HUMBLE ORIGINS

The Gravity Gun began life as what was primarily a development tool, nicknamed the Physgun, that could be used to manipulate objects. Over time, the potential in the idea was realised and it became the Gravity Gun.

SUPERCHARGED

One of the most memorable and satisfying sections of *Half-Life 2* occurs near the end where the Gravity Gun gets supercharged, allowing you to grab hold of enemies.

unanswered, particularly through the fascinating character that is the G-Man, who could frequently be spotted following your progress throughout the game. "G-Man works because people love a good mystery," Adam suggests. "The way he keeps ominously and casually showing up throughout your adventures really helps build him up within the player's mind. To paraphrase someone else, the theatre of your mind is way more interesting than anything you could put on-screen. G-Man feels like a threat without him ever really talking much or showing much emotion."

This tantalising narrative justification for a sequel was bolstered by the huge critical and commercial success of *Half-Life*, the game selling one million copies by April of 1999, a mere five months after its release. A follow-up seemed inevitable and indeed, in 2004, the hotly anticipated sequel, *Half-Life 2*, was released.

***Half-Life 2* began in the same way as its predecessor: with Gordon Freeman arriving on a train.** As well as being a deliberate echo of the first game, this felt like a statement of principle, a recommitment to the ideas that made *Half-Life* such a success. You were arriving in a world that wanted to convince that you could be in a real place. That world was the incredible City 17, a dystopic Eastern-European-inspired city overseen by the oppressive alien Combine. In introducing us to and building a vivid picture of this place, the game did much of what the original *Half-Life* did, but better. It gave you a taste of what people's day-to-day life was like as you moved through it, showed you what this city was like to live in through gameplay rather than exposition – having a bullying guard force you to pick up a can he knocks on the floor – and told you stories via its environment, the dilapidated ships that lay abandoned in barren landscapes where water once flowed gesturing with characteristic subtlety to the impact the Combine has had on this world, to give just one example. It fleshed out the idea of picking out information from stolen moments of conversation, using PA announcements to give you a flavour of how the Combine rules here, and created more rounded and believable characters for you to interact with. Even the game's architecture was effectively employed as a way to give the player information without relying on exposition, functioning as a visual representation of what kind of force the Combine was and what it was doing to the city via the steel of its brutally angular buildings jutting into the city's traditional architecture.

Half-Life played a huge role in establishing the idea of videogame levels as real places rather than shooting galleries. *Half-Life 2* added a depth and richness that the games that came after would try to emulate once again. But it was not just an aesthetic success. "The level design of both games was excellent, especially *Half-Life 2*," says another great influencer of the FPS genre, *Doom* and *Quake* designer John Romero, who cites *Half-Life 2* as a game that "raised the bar in design".

» [PC] While *Half-Life 2* featured exciting new emergent game design, it was still a first-person shooter at its core.

The game was designed in such a way that the world felt incredibly open and free, whilst subtly guiding the player on the path they were supposed to take and arming them with the knowledge they would need to do it without them even knowing it. "*Half-Life 2* and its Episodes set a new standard for teaching the player and layering design mechanics to make the player not only feel powerful, but in control," Adam says. *Half-Life 2* was great at *showing* you how things work, rather than telling you. When it introduced new ideas, it would typically take a gradual approach, showing you a mechanic with zero pressure, in its simplest form, then ramping up the danger or complexity associated with it as you encounter it again and again. For example, there's a moment where the game forces you through a narrow gap with barrels that you have to push past, inevitably sending one rolling down the hill in front of you, where it gets hooked and reeled in by the hanging tongue of a Barnacle. You now know that you can effectively feed Barnacles objects to get those pesky tongues out the way and get past them. Then, immediately after that, you find some explosive barrels (which you already know are explosive by this point). You can't help but put two and two together and realise that you can feed this to the Barnacles, set it alight with a gunshot and blow them all away to clear the area. Plenty of games have failed to learn this lesson, continuing to bore us with clunky tutorials, but those that have been wise enough to learn from this approach have emulated it again and again in the years since the game's release.

Six years having passed since the release of the first *Half-Life*, *Half-Life 2* naturally took leaps forward from a technical perspective. Even more so than its predecessor, those technical innovations would have a huge influence going forward. "The timing of those games at a moment in gaming that was rich with technical opportunities came into play," says David on the series' impact. "On *Half-Life*, skeletal animation and AI were opportunities for innovation. On *Half-Life 2*, rigid body physics, facial animation, materials and shaders were all becoming possible in real time. Going after those technical innovations and exploring the implications of them created the pillars of the product."

> "GOING AFTER THOSE **TECHNICAL INNOVATIONS** AND EXPLORING THE IMPLICATIONS OF THEM CREATED THE PILLARS OF THE PRODUCT"
> **DAVID SPEYRER**

The game was heavily praised for its stunning visual effects and incredible facial animation – the latter a big part of what made the character of Alyx work, small movements of her face able to communicate emotion without her having to say anything. Again, Valve had set a new bar for what was to come.

While those facial animations and the games stunning visuals were influential, it was unquestionably the game's pioneering use of physics that would have the greatest impact from a technical perspective.

We're now so used to knocking over and throwing objects around in games that it can be easy to forgot how novel this once was. *Half-Life 2* was *the* game that made these kinds of physics-based interactions into something that would become commonplace. Going back

GETTING TO THE SOURCE

THE FLEXIBILITY OF VALVE'S INCREDIBLE ENGINE

As the engine that powered *Half-Life 2*, Source showed itself to be a powerful tool capable of some impressive technical feats. The engine arose out of GoldSrc, the engine used for *Half-Life*, which was already based on a modified version of the *Quake* engine, which Valve had licensed from id Software. While working on *Half-Life*, the team began splitting off new features they were working on into what would become Source. Partly because of this history, the Source engine is unusual in that it has a modular nature. Unlike other version-based engines, in which numbered iterations are released to replace previous versions, Source modules can be updated independently. This modular nature makes it a flexible tool that can be tweaked and updated with less risk of the ripple effect of backwards-compatibility problems to which other engines are more susceptible. Major overhauls of the engine have occurred, however, in Source 2006 for the *Half-Life 2* Episodes, Source 2007 for the release of *The Orange Box* and a tweaked version for *Left 4 Dead*. Games made in Source include *Team Fortress 2*, *Portal* and *Portal 2*, *Vampire: The Masquerade – Bloodlines*, *Dear Esther* and *The Stanley Parable*. The engine is now being replaced by Source 2, first used for an update of *Dota 2*, and the engine on which *Half-Life: Alyx* has been built.

POWERING STEAM

HOW HALF-LIFE 2 HELPED KICKSTART DIGITAL DISTRIBUTION

In an age where digital distribution, and Steam in particular, has been accepted as the 'normal' way games are purchased on PC, it can be difficult to remember how contested this once was and how much criticism Valve received for using *Half-Life 2* to push its young distribution platform. The game, even when bought on CD, required that Steam was installed and active to play. This raised all sorts of legitimate concerns around ownership, servers and so on – still points of discussion today where we have seen servers switched off and effectively kill games, for example.

There are few games that could have persuaded people to overlook those very real concerns, but *Half-Life 2*, it seems, was one of them. "I don't think I would have installed Steam without *Half-Life 2*," says *System Shock 2*, *BioShock* and *Void Bastards* developer Jonathan Chey. "Valve needed a killer app and so they built one themselves – what better way to do it? Would it have become a success without it? Hard to know, but it certainly would have built momentum much more slowly."

Thanks to the anticipation that surrounded the release of the sequel to the groundbreaking *Half-Life*, PC players bit their lip and downloaded Steam en masse. Now, just as Valve wanted, they were in. From here, it wasn't long before non-Valve games began to appear, shifting Steam from a download service to a store, digital sales became a wallet-breaking phenomenon and Steam established a stranglehold on PC gaming. It effectively killed the market for CD-based games and made the service the biggest PC distribution platform by far. This phenomenal success also had the regrettable effect, for those that enjoy its games, of shifting Valve from being a videogame developer, to a company far more focused on its money-making store.

All Games › Action Games › Half-Life Franchise › Half-Life 2
Half-Life 2
Community Hub
HALF-LIFE 2
1998. HALF-LIFE sends a shock through the game industry with its combination of pounding action and continuous, immersive storytelling. Valve's debut title wins more than 50 game-of-the-year awards on its way to being named "Best PC Game Ever" by PC Gamer, and launches a franchise with more than...
RECENT REVIEWS: Overwhelmingly Positive (1,532)
ALL REVIEWS: Overwhelmingly Positive (97,193)
RELEASE DATE: 16 Nov, 2004
DEVELOPER: Valve
PUBLISHER: Valve
Popular user-defined tags for this product:
FPS
Action
Sci-fi
Classic
Masterpiece
+
Follow
Ignore
View Your Queue

to *Half-Life 2*, some of the game's puzzles admittedly scream "LOOK AT THE PHYSICS!" a little too loud, but they also bring so much to the believability in the world, from the way barrels roll down hills and float in water, to the way explosions create unpredictable chain reactions. Because of this game, physics became a standard for the titles that would follow in its footsteps.

That *Half-Life 2* was able to convince us of the value that physics simulations can bring to games is in large part down to its most famous weapon: the Gravity Gun. "The Grav Gun is probably the most important weapon ever devised for an FPS because it showed how physics simulations could be used for great gameplay," argues Jonathan Chey. "Of course, lots of other games have messed that up since, but it's still an inspirational weapon because of its multiple uses and potential for innovation by the player."

"The Gravity Gun was incredible because of its versatility," says John Romero, citing Ravenholm as his "favourite area". Here, we were encouraged to see the potential of physics-based gameplay in the most enjoyable of ways. Wondering through a macabre zone populated with shambling zombies, you couldn't help but begin to calculate the possibilities when you spotted a sawblade on the wall, instinctively grabbing it with your Gravity Gun and then firing it at a zombie to slice it in half.

Ravenholm is arguably the perfect encapsulation of what made *Half-Life 2* special. It served as a successful prototype for a kind of gameplay we'd never seen before, it took place in

an expertly designed area, crafted with technical and aesthetic excellence, and built an incredible atmosphere through environmental storytelling and sound design.

Jonathan Chey tells us that, as with the first *Half-Life*, himself and his colleagues couldn't help but be influenced by it.

"When we built *BioShock*, we were able to draw on the kinds of resources we needed, and I think it's very much a game that combines ideas from *System Shock* and *Half-Life* (and, I think, moved the bar forward on what both series had done). It keeps the more free-form level design, the RPG elements, but adds much more sophisticated level design, environmental storytelling and in-engine story sequences to that," he says on the elements of the *Half-Life* series that impacted the way the game was designed.

"Even *Void Bastards*, an indie game without the budget to do many of these things, pays attention to the legacy of the *Half-Life* series," he continues. "The opening level that gently teaches you how to play while starting the worldbuilding process seems like a cliché now, but I don't recall seeing it before the iconic train ride to Black Mesa. The first level of *Void Bastards* isn't so different."

"I believe any FPS developed after *Half-Life 2* was influenced by it, simple as that," says John

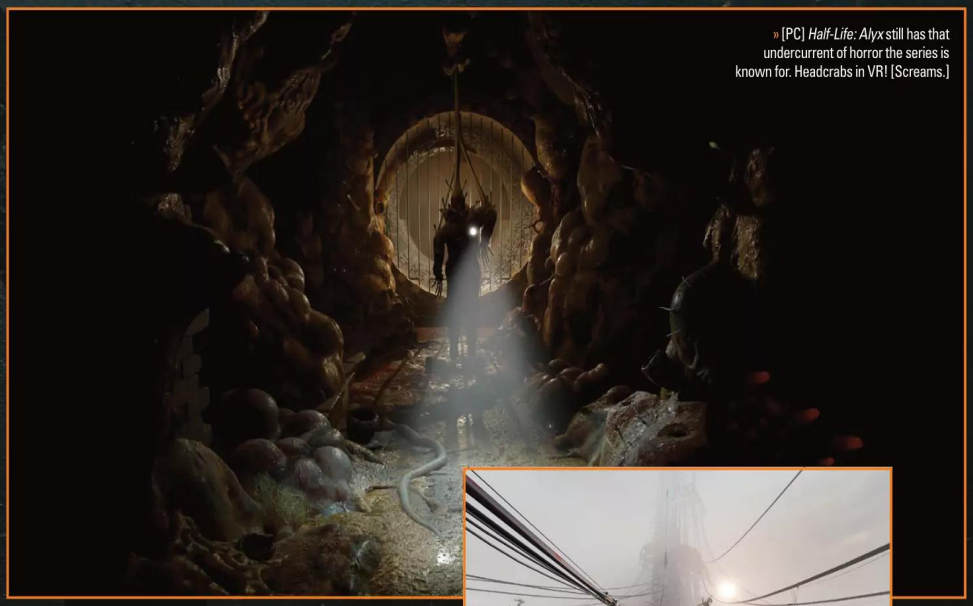
> "THE OPENING LEVEL THAT GENTLY TEACHES YOU HOW TO PLAY WHILE STARTING THE WORLDBUILDING PROCESS SEEMS LIKE A CLICHÉ NOW"
> **JONATHAN CHEY**

» [PC] *Black Mesa* finally released this year after a lengthy development period.

» [PC] We don't remember Dr Kleiner looking this good in the original *Half-Life*…

» [PC] *Black Mesa* breathes a whole new lease of life into Valve's landmark shooter.

» [PC] Impressed by the work from its development team, Valve gave *Black Mesa* its 'blessing'. You can buy it on Steam right now.



» [PC] *Half-Life: Alyx* still has that undercurrent of horror the series is known for. Headcrabs in VR! [Screams.]

Romero on the impact *Half-Life 2* had. "It raised the bar of the genre. The key points of influence are a strong story, gameplay pacing, world realism, weapon variety and physics use."

We can all look at something like the prevalence of physics in modern games, or slow-burn introductions that mirror Gordon's first ride and trace that legacy back to *Half-Life*. However, David points out that there are other, less obvious ways in which *Half-Life*'s legacy is still very much in evidence in modern videogame development.

"Some of the things that Valve did were innovative at the time, but have since become more commonplace," says David. "For example, Valve recognised that for a game design to succeed, it has to be tested by players with no prior knowledge of the designers' intent. Playtesting with real customers reveals the hundreds of ways that game designs which sound good in theory can fail in practice. Following that process, and relentlessly fixing the problems observed in playtests until the design succeeds, was a huge part of *Half-Life*'s success.

"Another innovation was eliminating the design hierarchy and trusting individual contributors to make design decisions, which contributed to much of the moment-to-moment craft and magic of the *Half-Life* franchise. So many of *Half-Life*'s inventions arose from someone understanding the constraints of a particular problem space and trying to do the coolest thing they could within those constraints."

In that respect, *Half-Life* may still have plenty to teach us. The 'cabal' system referenced by David, used to develop the *Half-Life* games, split the team up into semi-autonomous groups working on different aspects and sections of the game outside of a standard hierarchical system, offering a space for innovation and variety that was evidently very successful. It remains, however, unusual.

"I do believe the cabal development arrangement was a great idea that resulted in a rollercoaster of an experience," says John Romero. "I've never developed a game with that team structure, but I do think some companies in the industry should try and see how it turns out."

Regardless, the huge impact *Half-Life* has had on videogames is undeniable. In frequent greatest ever game list appearances and semi-serious jokes clamouring for a true third instalment in the *Half-Life* series, the impact it has had on the fans that played it is as obvious as its influence on the designers making the games we are playing today. It is as loved as it is important. And, it's not quite over yet.

"I hope that *Half-Life: Alyx* can be for virtual reality gaming what *Half-Life* was to first person shooters," says David. "I hope that it brings new people to VR by demonstrating what a full, high-production-value VR game can deliver in terms of richness, engagement and immersion in a fictional universe."

And we hope that there might just be more to come from the series. Why not take a third shot at revolutionising videogames?

» [PC] City 17 is an oppressive place after the Combine invasion, and Valve was inspired by many cities throughout Eastern Europe.

» [PC] Recent innovations in VR inspired Valve to return to the *Half-Life* series with *Half-Life: Alyx*, which is available now.

» [PC] Valve's drive to push the envelope, plus an exciting new foray into VR, has made *Half-Life: Alyx* an electrifying experience.

THE HISTORY OF TONY HAWK'S PRO SKATER

WORDS BY ADAM BARNES

AS A FRANCHISE, THIS SKATEBOARDING SERIES ELEVATED TONY HAWK, NEVERSOFT AND EVEN THE SUBCULTURE OF SKATING TO A WHOLE NEW LEVEL OF RECOGNITION. WITH THE ORIGINAL PRO SKATER GAMES BEING REMASTERED, WE EXPLORE THE HISTORY OF ONE OF GAMING'S MOST INFLUENTIAL BRANDS

Have you seen Tony Hawk recently? Not just out and about buying his groceries, but instead rocking his deck, riding a half pipe and trying to slam that infamous 900? With the helmet on and all that vertical air, it's impossible to spot the difference between then and now, between the Birdman many of us will recognise from the late Nineties and the here-and-now 2020 version. There may be wrinkles around his eyes and silver streaks in his hair, but age hasn't stopped this public figure from doing what people love to see him do. That's kind of the feeling surrounding the games his name has been attached to as well, and if the excitement surrounding the release of the remasters for the original two *Pro Skater* games has proven anything, it's that there's both a great thirst for some classic *Tony Hawk* gaming and clear evidence that some games can age like wine, not cheese.

Of course Tony Hawk wasn't always associated with the brand. First came Activision, a then-little-known developer called Neversoft and a PlayStation rendition of Bruce Willis. "We were working on this *Big Guns* game for Sony, but that got cancelled and Neversoft nearly collapsed," says Mick West, one of the three cofounders of the studio. "The company was running out of money, we had something like 12 people on staff – but then we hooked up with Activision, and they gave us *Apocalypse* [a third-person shooter featuring the *Die Hard* star]." All that Activision wanted was a movie tie-in out for Christmas, but Neversoft did such a good job of it that Activision offered the studio some additional work on a new title. "The original concept was that Activision had decided there was a hole in the market for a skateboarding game," Mick explains, "and so the idea was to do… a skateboarding game." Neither Neversoft nor Activision had any real "idea of what that would actually be", and so the team set about trying to figure out exactly what form such a game should take and what would make it fun. "So we built a prototype in the *Apocalypse* engine with Bruce Willis skating around on a skateboard."

There wasn't really any guidance from Activision, and early on in its development obviously Tony Hawk wasn't tied to the project. "It was just called '*The Skateboarding Game*'," recalls Mick, "and internally for a long time we referred to it as '*Skate*' because that was the name we used in the source control system." Initially, the design was akin to Sega's *Top Skater*, but Neversoft noted that people were having more fun tricking around in the half pipes or off ramps in the first level than actually racing to the finish line, inspiring the focus on tricks and combos that the franchise introduced. "We started making more things like that, it just kind of grew organically," remembers Mick. Some of the arcade elements remained, such as the time limit and score-attack-style mode, but from there objectives would enter into the mix and *Pro Skater* was born.

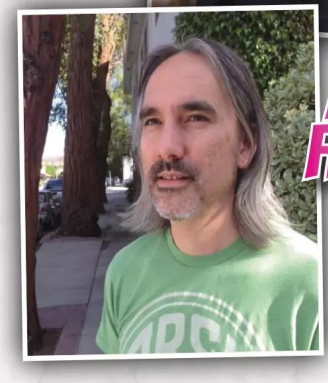
> **"ACTIVISION DECIDED THERE WAS A HOLE IN THE MARKET FOR A SKATEBOARDING GAME... SO WE BUILT A PROTOTYPE WITH BRUCE WILLIS ON A SKATEBOARD"**
> MICK WEST

MICK WEST

Mick was one of Neversoft's cofounders. Today, he works to debunk pseudoscientific claims, such as UFOs and chemtrails.

BARRY MORALES

Barry is senior producer at Vicarious Visions, the development studio behind the new *Pro Skater* remakes.



ALAN FLORES

Alan joined the series at a time when the team was pivoting to the more powerful PlayStation 2.

But it wasn't until Tony Hawk got on board (heh…) that Neversoft knew that Activision saw potential in the title. "When they started signing people up, these skaters like Tony Hawk, Bob Burnquist, Eric Koston – famous people – that just showed that Activision was committing to it," Mick says. The addition of licensed music proved "Activision had its machine behind it," and this added legal effort and extra spend didn't just add a sense of confidence to the team. Ultimately, this meant a more relatable and honest experience. Skateboarding at the time wasn't nearly as pervasive as it is today, but throughout the Nineties its own subculture was only just forming, one that epitomised an attitude but also found roots in music, fashion and language. Activision helped to import a lot of this into the game, but Neversoft focused hard on figuring out exactly what skater culture could mean for the game. "We spent a lot of time at the start of the project watching skate videos," says Mick, "and this was really the thing that defined the game. There were loads of skate videos back then, we were watching them on VHS tapes. Every lunchtime we'd watch an hour of skate videos, we'd just immerse ourselves in the skate culture and see what the types of things that people liked to do." You could argue that for all the efforts in creating thoroughly compelling gameplay to run smoothly, it was actually the way that skater culture was so well-infused into the game that made the title such a success. And it was: releasing first on the PlayStation in 1999 and then on N64 and Dreamcast in 2000, *Tony Hawk's Pro Skater* (*Tony Hawk's Skateboarding* in the UK) was met with immediate success.

So began one of the most iconic franchises in gaming, one that not only helped to propel Tony Hawk and skater culture into the limelight, but one that gave Neversoft a great deal of recognition – if not for the game itself, then for the fun, unlockable videos the studio included in the game. For a long time Neversoft would become *the* skateboarding game studio, especially once the success of *THPS* was fully realised. "Some of the team were skaters, the artists especially," recalls Mick of Neversoft's initial attitude towards skating. "Joel Jewett [Neversoft cofounder] got really into it, he ended up building a half pipe in his backyard, and some of the artists were previously skateboarders." The decision to make a sequel was made even before the original was released, and knowing that a sequel would be needed did impact the way the studio would grow. "Some of the people that we hired for the next games afterwards," adds Mick, "if they could skate then that was actually an advantage and it helped them to get hired."

» [PlayStation] Discovering each level's gaps within just two minutes was all part of the exploratory fun of *Tony Hawk's Pro Skater*.

But when it came to the sequel, Neversoft was actually quite tentative, despite the confidence it had behind the game. "The budget went up and we hired more people, but not a huge amount was different between the first and the second game," says Mick. "Because we didn't at the time know just how much of a big thing it was going to be, we actually split the company into two teams: one would work on the *Spider-Man* game and the other would work on *Tony Hawk's 2*." The benefit was that the engine was already in place, so it was easier to create new content and add in new parts to the game within a yearly turnaround. The manual was the first addition, which was intended for the original but was cut due to time restraints, and enabled players to chain long combos together around each map. "It was almost like an easier game to make in a way, because in the first

> **"WHEN THEY STARTED SIGNING PEOPLE UP, THESE SKATERS LIKE TONY HAWK, BOB BURNQUIST, ERIC KOSTON – FAMOUS PEOPLE – THAT JUST SHOWED THAT ACTIVISION WAS COMMITTING TO IT"**
> Mick West

DEFINING LEVELS

WHAT STAGES WERE WORTH TAKING A TUMBLE IN?

WAREHOUSE

This drab old warehouse may not be the best level in the *Tony Hawk's* series, but it's absolutely iconic. That first roll down into the basin, shattering the glass cabin above the half pipe or gapping the taxi cab for the first time: it's all ingrained into the minds of any *THPS* player.

SCHOOL II

While the original's School level was a solid contender, *THPS2* took the format and just perfected it. This was one of those rare levels that just kept on unfurling the more you played: extra places to score quick points, tantalising hidden areas and a setting that felt like home for any skater.

ALCATRAZ

By the time the fourth *Pro Skater* rolled around, Neversoft knew what made a great level. The PS2 hardware enabled a huge variety of locales, but Alcatraz was one of the more memorable. It was a self-contained combo heaven, built for pro skaters to work at unveiling its potential.

DOWNTOWN

Though the original game also featured a similar urban map, Streets, it was Downtown that set a precedent for the direction the series would go. Skaters tend to see their urban landscapes differently, and Downtown, with its hidden flexibility and depth, enabled that in *THPS* players, too.

[PlayStation] How many young minds have built superhuman memories thanks to the need to track which tricks were already used in a single *THPS* run?

[Xbox] *THPS2X* was an Xbox exclusive with improved visuals, *THPS*'s career mode, five new stages, and system link support for up to eight players.

[PlayStation] Multiplayer sessions of HORSE or Graffiti are still indisputably some of the best split-screen experiences available.

[PS2] The switch to PS2 meant better visuals and larger environments, but it didn't change the core experience all that much.

[PlayStation] The PlayStation version of *THPS3* featured the same levels, but with much less visual flair and changed objectives to fit within hardware limitations.

[PS2] *Pro Skater 3* drove the series towards more irreverent objectives, playing to that sense of exploration within each new level.

VENICE

Based on a real-world location called The Pit in Venice Beach, California – and even featuring a gap created by Chad Muska – Venice was a challenging level that really made players make the most of its quirky intricacies. It also introduced long-standing favourite NPC Ollie The Magic Bum.

CANADA

For fairly obvious reasons, the outdoor areas in *Tony Hawk's* games rarely gave much pleasure until the opportunity to de-board was an option. Canada from *THPS3*, however, was a rare exception – an impressive level that could theoretically be comboed in a circuit… if you practiced enough.

KONA

The extra power of the PS2 and a better engine in *THPS4* ultimately led to a great number of levels in the fourth iteration, but the recreation of real-world Kona – and its well-known snake slalom – felt like the game was offering players a toolset of options. It really was a sandbox for combo creation.

SKATE HEAVEN

Skate Heaven is something all players strove to reach. Though quirky (it appears to float in space), the concept is an amalgamation of some of the best skate spots, replete with a volcano for a sneaky hidden skate park within the map. Tony Hawk's house is also featured in this stage.

BUILD THE ULTIMATE SKATE PARK

HOW TO MAKE A KILLER CUSTOM STAGE

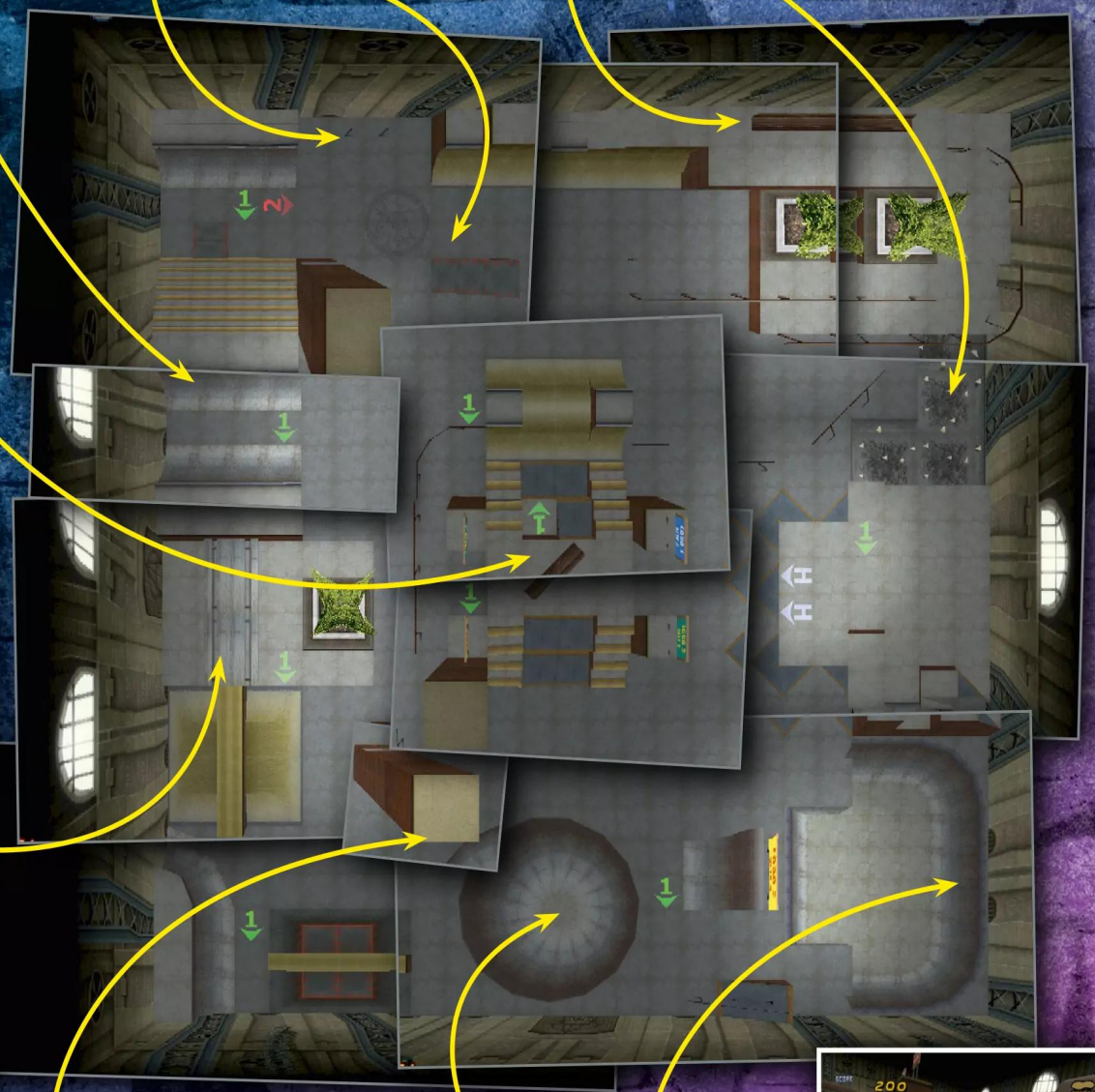
1 This is perhaps an unnecessarily tricky place to gap into the half pipe beyond the steps, but what is a custom skate park without a pointlessly difficult gap to aim for?

2 Successfully pulling off a long and elaborate rail-riding route is hugely satisfying, so incorporating one that utilises other pieces (like railed quarter pipes) is a must for any level

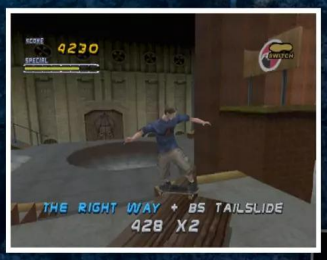
3 Kickers are essential ways to start great combos, but the spacing needs a lot of trial and error. It's easy to assume you'll make the gap from the editor's isometric view.

4 Climbing a high point while affixed to a skateboard is a rewarding feat, so why not create a nice relaxing space for your skater to survey the horizon.

5 Spikes. Because every good skate park needs an immediate and brutal way to die. Putting this here makes attempting the rail a 'win or bail' situation.



6 Though it might look simple, this bench here is actually trickier to land on than you might think. Make a gap out of this, and reward those who persist enough to succeed.



7 Propelling yourself out of a half pipe at full speed isn't the easiest thing to control in *THPS*, so if you create an opening reliant on this, make that gap easier as a satisfying, punctuating point on the skate line.

8 Behind here is the starting point of the long rail that runs through our skate park. It's important to playtest your park if you want your friends to take it seriously; you'll quickly learn what does and doesn't work.

9 Such a bowl isn't the most exciting feature of a skate park, but some *Tony Hawk's* players are only happy infinitely tricking inside or grinding around the edge of one of these. Sometimes you've gotta appeal to the masses.

10 Custom pools are so much more satisfying to add into your skate park than the premade ones, especially when it comes to devising novel ways of dropping in.

game we were learning so much new stuff. In the second one, we knew what a really fun skateboarding game was so we could just build on this really solid base and just knocked it out by Thanksgiving."

THPS2 released on PlayStation in September 2000 followed by Windows, Game Boy Color and Dreamcast with further ports arriving for Game Boy Advance, N64 and Mac a year later, and was met with unanimous praise. The series has had an erratic history on handheld devices, but its GBA versions – handled by Vicarious Visions – were widely considered to be a solid recreation of the *THPS* format despite their isometric viewpoint. The main PlayStation sequel, however, took the foundational gameplay laid down by the original and improved on it in ways that made sense to become the definitive *Tony Hawk's* game that every game afterwards would hold a kickflip to. Custom characters, refined level design and a level editor enhanced that core experience, but it was the addition of the aforementioned manuals and wall rides that enhanced the experience – adding to the palette from which the skater could choose to build a combo masterpiece. This was something Mick was especially proud of, having written a unique scripting language just for the trick system. "It was really simple in the first game, but in the second game I had made essentially a little language in assembly language that was specific for the trick system. This would allow you to do things like branch tricks based on various conditions."

> **"IN TONY HAWK'S 4 YOU CAN SEE A LOT MORE TEXTURES, DETAILS, MORE CHARACTERS AND THINGS LIKE THAT BECAUSE WE WROTE OUR OWN, MORE POWERFUL ENGINE THAN THE RENDERWARE ONE"**
> MICK WEST

At this point the series was already on track for a hall of fame nomination, but Neversoft didn't let up. A third game was due and again it was only going to have a year's turnaround. A simple task considering the improvements that *THPS2* managed in the same timeframe, right? "Well the third game was a huge change for us because we did it on the PlayStation 2," explains Mick. "Neversoft switched over entirely to PS2 development at that stage and completely dropped all the PlayStation stuff." Mick admits that this was a little bit of a setback for the team. "Now we suddenly had to learn all of this new stuff. Of course, we had started doing it before the end of *Tony Hawk's 2*, so we hired some programmers to work on the engine. We ended up licensing the RenderWare Engine to do it. So by the time we had finished *Tony Hawk's 2*, we had a little bit of stuff running on the PS2 but it was also very much a learning curve – it was a brand-new system for everyone."

And like so many developers around the turn of the millennium, Neversoft was growing. In part this was the success of the *Tony Hawk* series, but it was also partly a necessity to take on the growing demands of 3D game development. "I remember playing [the first] *Tony Hawk's* at the office just after I started," recalls Alan Flores, who started at Neversoft as level designer on the studio's *Spider-Man* game. "It was super hard for me, it was super frustrating, but I couldn't stop playing." Alan explains that the whole company moved over to *THPS3*, and the move to the next generation of hardware was an opportunity to make something special. "But for me, I had no idea how to make a skating level," he admits. "It was really a struggle. The first level I worked on was Suburbia, and I didn't really understand how to just put lines into it."

There was a larger scale to *Tony Hawk's Pro Skater 3*'s levels thanks to the PS2's extra hardware power and the game design had been solidified so there were no questions on that front, but there was one issue that was standing in the team's way. "One of the things I remember the most with the development then is that we had problems with RenderWare," says Mick. "They had a limitation in their engine where if you use a texture for one model, you couldn't reuse the same texture for a different model. So if you had a bunch of different cars, they all had to have completely unique textures which obviously limited the amount of models you could have." Mick points to how he had to spend time fixing bugs in the third-party engine just to get the game made, unable to avoid the "sparse" look of *Tony Hawk's 3*. "You can see that change between *Tony Hawk's 3* and *Tony Hawk's 4*. The third game looks kind of clean and sparse because there isn't that much detail,

» [GBA] Each new release came with an equivalent portable version, with the five GBA games all using the same isometric game design.

» [PS2] The industry's push towards open world gaming had a decisive impact on the *Tony Hawk's* franchise, but *THPS4* wasn't quite ready for that just yet.

PRETENDING I'M A SUPERMAN

SOUNDTRACKING PRO SKATER, AND OUR LIVES...

While skating and punk music have long been intertwined, there's no doubt that for those who picked up a board because of *Tony Hawk's Pro Skater* (this writer included), the music that accompanied each bail influenced a lot of formative years. Bands like Goldfinger, Bad Religion or Rage Against The Machine didn't just accompany the skating action, they soundtracked the lives of those that played the games. Should Powerman 5000's *When Worlds Collide* ever be played at a party, you just know that those that bellow its lyrics the most passionately are likely *Tony Hawk's* players.

As the series trundled on, each newly rendered kickflip was punctuated by the tracks that matched the skating subculture. The likes of Millencolin and The Dropkick Murphys became My Chemical Romance, Fall Out Boy and Green Day – the latter even getting featured in-game with *American Wasteland*. And when punk moved on, dying one of its countless, cyclical deaths, the games didn't discard the importance of music, with garage rock from The Black Keys or The Raconteurs interspersed alongside Anti-Flag, Royal Blood and Death From Above 1979.

It says a lot that one of the most important aspects of the reveal of the 2020 remaster was the songs that were to be included. Vicarious Visions had a challenge to replicate such a crucial part of the *THPS* experience. "Some of the companies that hold the rights to the music have changed or don't even exist anymore," admits Barry Morales of Vicarious Visions. "Nevertheless, we set out on a quest to get as many of the original songs as possible and I am happy to say we got pretty darn close."

"IT JUST OPENED IT UP SO WE COULD WALK AROUND, INTERACT WITH PEOPLE AND HAVE A BIGGER AND MORE ARCHING STORY"

ALAN FLORES

» [PS2] A lot of the tasks in *Pro Skater 4* were silly and OTT, but that just added to the fun and arcade 'feel' that the franchise was about.

» [PS2] The influence that the likes of *GTA* had on the franchise is especially noticeable in *American Wasteland*.

» [Xbox 360] The addition of BMX biking was the 'big new feature' for *American Wasteland* and about as far as it could go for innovating.

there aren't these lavish textures everywhere. In *Tony Hawk's 4* you can see a lot more textures, details, more characters and things like that because we wrote our own, more powerful engine than the RenderWare one."

It was this pair of PlayStation 2 *Pro Skater* games that started to see a change in direction for the series, expanding the levels to incorporate larger environments, a more irreverent approach to the gameplay and a greater emphasis on the open world style of gameplay that was beginning to see prominence on the console. Neversoft was able to keep its hot streak going, with *THPS3* releasing in 2001 and *THPS4* in 2002 across the range of consoles, computers and GBA. Both were very well-received, but the former is considered the all-time greatest *Tony Hawk's* game. The addition of reverts – which added an option to trick out of a half pipe and into a manual for the ultimate combo chain – was the final part to complete the comboing picture. The fourth game was stellar, but everything since brought new features and fun but not necessarily improvements to that core experience.

By the time the pair of *Underground* games came around (2003 and 2004), it was already high time that the *Tony Hawk's* games did something different. Gaming had evolved a lot in that short space of time and the industry was moving away from the short, arcadey style of gameplay and instead into more narrative-based, story-driven designs. "It just opened it up so we could walk around, interact with people and have a bigger and more arching story," says Alan of the changes that came with *THUG*. "As developers, sometimes you do something for so long that you want to try something different."

But it wasn't just the storyline of the amateur-skater-made-good that arrived with *THUG*, because now players could – for the first time – dismount their board and explore on foot, shimmy along ledges and generally navigate the open world in a more free-form fashion. "It was fun in some sense because it opens it up a lot," says Alan. "You could put some stuff in areas that most people wouldn't be able to access just with the skateboard. But also it gives us the opportunity to sort of break the rules of skate lines."

» [Xbox] The Natas Spin was the final addition to the series' trick repertoire, named after its creator Natas Kaupas who first 720'ed on a hydrant in 1989.

Though it was a fairly big change for the franchise and therefore opened it up for extra scrutiny, it was very well-received. *THUG* released in 2003 with a more irreverent sequel coming in 2004, both on PS2, Xbox and GameCube. Though the high of *THPS3* was never reached again, both were well-received – things were going well for the franchise and for Neversoft as a result. "That was the golden age of Neversoft," recalls Mick, "because we were seeing the game going to number one in the charts each time we released a game. It was a great feeling. We knew that we were making games that were successful, and we knew that for the first few games we were innovating with the series and making a better game. Not necessarily an entirely different game, but it had changes that were new and interesting. Everyone was pretty happy to be working on it, and a lot of people who came on the team were people who had played the first games and they wanted to work on *Tony Hawk* games." And as the game grew in popularity, so too did the opportunities afforded to the team, Mick explains. "We'd take a team of an artist and a level designer out on-location to see what the location looked like, take reference photos and then come back. I think we started to do that with *THPS3*, but later on we were sending people to Moscow and Hawaii and all kinds of places."

Though a number of notable developers have dipped their hands in *Tony Hawk* development with the various ports of the franchise – Treyarch, Vicarious Visions, Edge Of Reality, Beenox and more have all been tied to the ports – Neversoft wasn't quite ready to relinquish ownership of the game just yet. "What happened after *Underground* was done, we were going to split the company up and half of the company was going to work on *Gun*," explains Alan. "I started working on that. We loved the franchise but there was some brand fatigue, and we thought we would let the series rest for a year. But Activision, they like to put out yearly sequels, so they said they were going to give it to another developer. So then me and a couple of other guys went to Joel [Jewett] and said, 'Forget that man, we can't give *Tony Hawk* away, that's our game, we wanna do it.' We couldn't stand the idea – especially that *Tony*

[DS] *American Sk8land* is the DS version of *THAW*, and it's a decent port. The touchscreen can be used to create skateboard deck art.

[Xbox 360] The annual release cycle of *Tony Hawk's* games created a certain amount of brand fatigue that Neversoft just couldn't combat.

[Wii] The limitations of motion control meant *Downhill Jam* was designed more like *SSX* than a true *Tony Hawk* game.

CAMEO CHARACTERS

THE WEIRD AND WONDERFUL ROSTER ADDITIONS

NEVERSOFT EYEBALL

APPEARS IN:
THPS3

HOW TO UNLOCK:
Complete the game with every character, including collecting three gold medals.

SPIDER-MAN

APPEARS IN:
THPS2

HOW TO UNLOCK:
Achieve 100% in Career Mode with a created skater to unlock the Webhead.

MICK WEST

APPEARS IN:
THPS2

HOW TO UNLOCK:
Enter a cheat code at the main menu, then use MICK WEST as your skater's name.

OLLIE THE MAGIC BUM

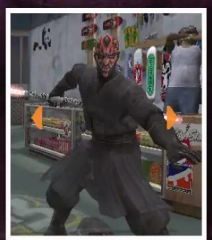
APPEARS IN:
THPS3

HOW TO UNLOCK:
Complete all goals in the game and get all three gold medals in Career Mode seven times.

DARTH MAUL

APPEARS IN:
THPS3

HOW TO UNLOCK:
Complete all 54 goals and get all gold medals as Tony Hawk. Or enter YOHOMIES in as a cheat code.



OFFICER DICK

APPEARS IN:
THPS1-4

HOW TO UNLOCK:
Depends on the game, but usually collecting all skate tapes with a single character or 100%-ing the game.

DAISY

APPEARS IN:
THPS4

HOW TO UNLOCK:
Earn $100,000 and complete all gaps... or enter (o)(o) as a cheat code. Err, yeah...

EDDIE

APPEARS IN:
THPS4

HOW TO UNLOCK:
Purchase him as a bonus playable character from the store.

MAT HOFFMAN

APPEARS IN:
THAW

HOW TO UNLOCK:
Beat the game on Classic Mode on Sick difficulty to unlock this BMX superstar.

RE-ENGINEERING THE BIRDMAN

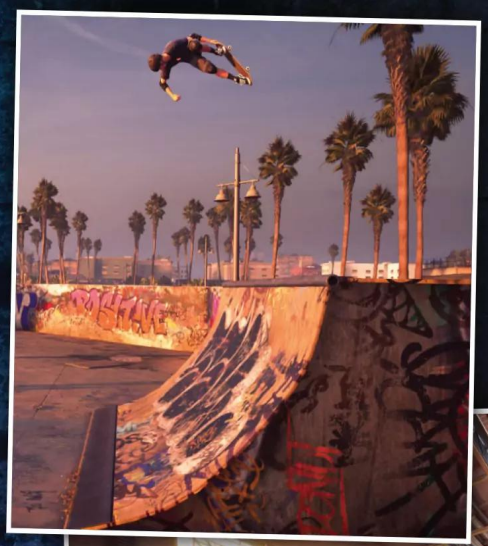
WHAT TO EXPECT FROM THE THPS REMASTERS

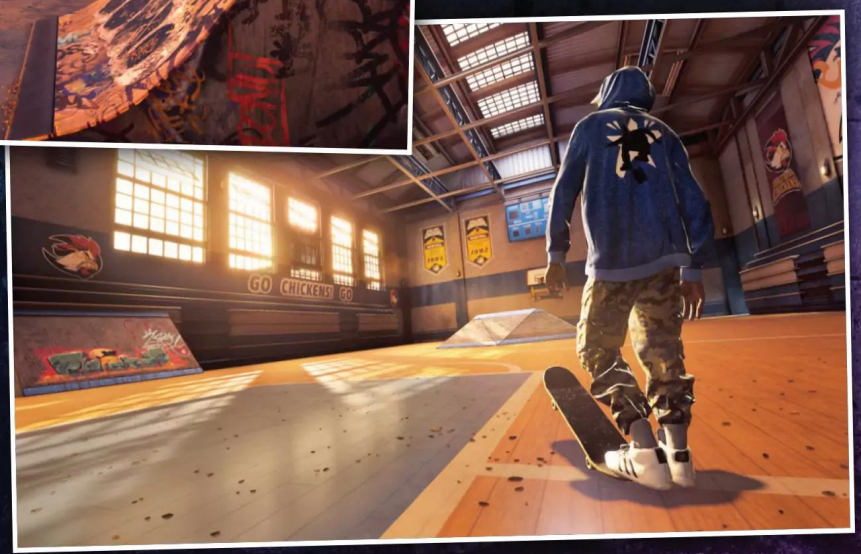
These days it's hard to get excited about yet another remaster when a new one is seemingly announced every week, but Activision's reveal of a complete rework of the original PlayStation *Pro Skater* games excited us greatly when it was announced. "For me, I was a teenager when the first games came out and I remember getting together with my friends and sister to play it after school almost every day," says Barry Morales, senior producer at Vicarious Visions – the studio behind the recent remaster. "To be on the other side of it now, developing this remaster for a whole new generation of players is an amazing experience and I am pretty stoked for it to be released."

The recent release has gone down well, although we're not too surprised. Vicarious Visions is a developer with merit, not just because the developer was involved with *Tony Hawk's* games in the past, but it has experience handling exactly this kind of project. "How to develop a game for a modern audience is an important thing you need to consider when creating a remaster," says Barry, "and luckily our experience working on the *Crash Bandicoot N Sane Trilogy* a couple of years ago helped with this. The one thing that we felt that was the most important thing to keep the same was the map layouts. The maps from the original *Tony Hawk's Pro Skater* and *Pro Skater 2* were so iconic that we did not want to mess with that."

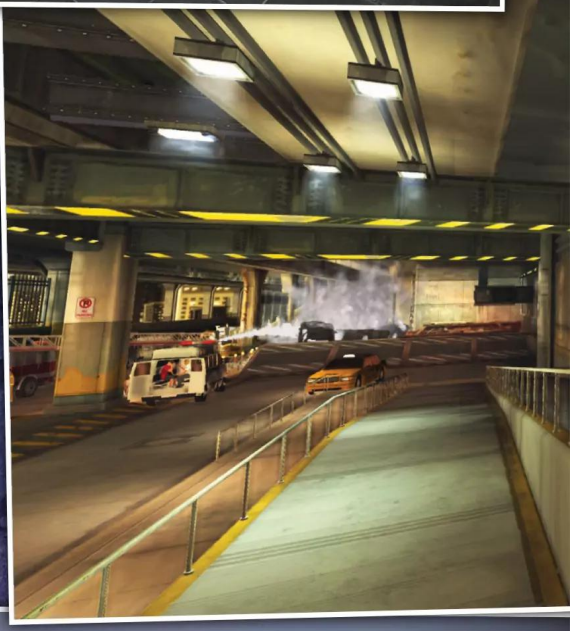
The studio's history with Activision meant it was able to get hold of the original code that Neversoft used, which gave the team a good base to start from, and helped to retain the way skaters handled in the PlayStation games. "There is something about how the original games felt that was so right and we did not want to lose that in creating this remaster," highlights Barry.

That's not to say there aren't elements of modernisation here and there, with Barry pointing to a new progression system to incorporate both *THPS* and *THPS2* into a single release. "We wanted to update this system to have a bit more crossover between the two tours. We felt it was important to have a system of challenges that would bridge both games to keep players engaged." And while new skaters will be dropping in, the returning skaters will appear as their current, decidedly more aged versions – albeit with a little bit of "Hollywood magic", as Barry suggests. This mentality carried over to the visuals, too, which retain the feel of the original levels with the "realism that you would expect with triple-A titles today".





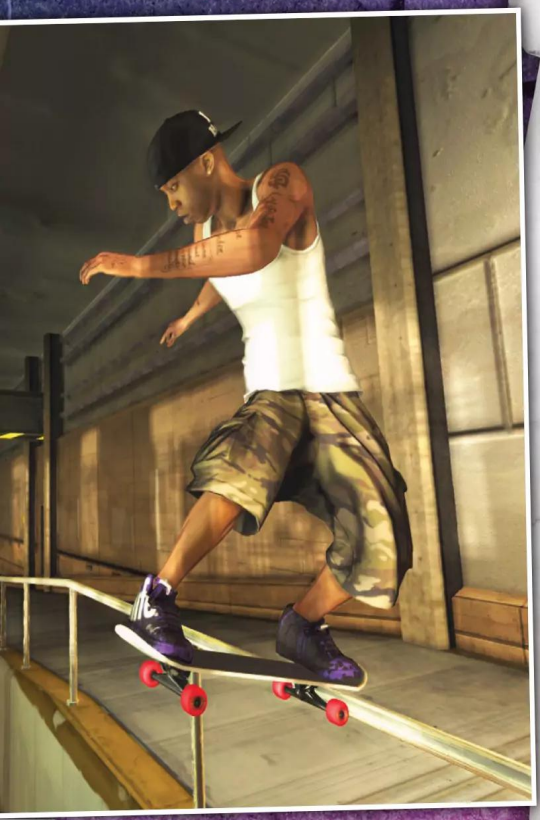
» [Xbox 360] This carefully staged marketing shot perhaps best highlights why *Tony Hawk's Ride* didn't land its gimmicky trick.



» [Xbox One] In a different timeline perhaps *Pro Skater 5* could've been a stellar return to form for the franchise…

» [PS4] Despite the modern look, Vicarious Visions has worked hard to retain the feel of the PlayStation games by utilising the original code.

"GOING FROM A TEENAGER PLAYING THE ORIGINALS TO A DEVELOPER WORKING ON THE REMASTER, IT'S A PRETTY SPECIAL EXPERIENCE – IT'S BEEN AN HONOUR FOR ME"
BARRY MORALES



Hawk had been in Neversoft for so long." The result was *American Wasteland*, and despite the enthusiasm given to it by the team, Alan admits it was a gruelling task. "We had spent a couple of months on *Gun*, we still had the yearly cycle, *Underground* was a big hit. We needed to figure out how to make a game in a little bit less time that could still hold up to *THUG*." The only way to handle this was with a looser title, one that was more akin to traditional *Tony Hawk's* gameplay but with crazier challenges and more freedom. Open world streaming technology was the big feature, though an interim solution ("You know, we're a yearly franchise," points out Alan) of long tunnels connecting the different areas was necessary. The short turnaround had an effect, of course, but it was still fairly well-received. But perhaps more importantly, it solidified the franchise's switch to more over-the-top and frivolous objectives, too, which practically every game afterwards followed.

American Wasteland released in 2005 for PS2, GameCube, Xbox and Xbox 360, while Neversoft would still work on follow ups with *Project 8* and *Proving Ground* for Xbox 360 and PS3 in 2006 and 2007 respectively. Though a Wii release attempted to do something different with motion control in *Downhill Jam*, it wasn't especially well-thought-out, and the general lack of freshness and innovation in the series ultimately meant its appeal began to dwindle. Sales were still stable, but like so many old-school franchises transitioning to a more serious era of gaming with the PS3 and Xbox 360, it was a challenge to pull in the annual audience in the face of so many drastic changes to gamer habits and interests. Alan admits that the team "were always worried about figuring out what it is the fans wanted for the next game" while still creating a game the studio could be happy with. "There's a lot of people that will stand up and say they love your game, but there are a lot more people who will come up and say, 'You guys are idiots, this is horrible.' There's always a ton of pressure." *Proving Ground* was particularly notable for such reasons. It arrived only a month after EA had decided it would grind into the genre with *Skate*, which introduced tricking with the analogue stick and was seen as innovative in ways that the *Tony Hawk's* games hadn't been for years. This made *Proving Ground*'s decision to return to an arcade style seem all the more ancient.

Things needed to change, but with Neversoft shifting its focus to *Guitar Hero* and about ready to let go of skateboarding, Activision needed to look for another developer to take on the mantle of *Tony Hawk* game development. But Neversoft's impact had inadvertently had an effect here, too, with the next non-mobile game in the series being *Tony Hawk: Ride*, releasing in 2009 on PS3, Xbox 360 and Wii. Much like the addictively clicky plastic peripherals of Neversoft's *Guitar Hero*, Activision and its enlisted developer Robomodo had decided that the best way to innovate on a tried-and-true genre was to add its own misguided novelty controller: thus *Ride* was born, which had players standing atop a 'skateboard' and having to physically hop for ollies or reach to the board for grab tricks. Activision had once termed it a necessary "breakthrough" for the series when pitching it to investors, but for gamers the release oozed cynicism from the start – and it obviously bombed. The money spent on such an expensive investment wasn't to be wasted, however, and so *Tony Hawk: Shred* released a year later, adding in snowboarding of all things to the gimmicky controller. In its first week *Shred* sold an embarrassing 3,000 copies in North America, and caused Activision to put the franchise on hiatus.

This effectively meant no 'new' release in the franchise besides a botched downloadable-only *Pro Skater HD* in 2012 that disappointed series fans and baffled newcomers and a pair of smartphone releases with *Shred Session* (2014) and *Skate Jam* (2018) – both of which, as you might expect, didn't amount to much. Robomodo did have one final shot in 2015, but the developer was not given a fair chance to do the legendary franchise justice. Though it was never officially confirmed, Activision's licensing agreement with Tony Hawk was due to end in 2015 and so Robomodo had only a few months to produce the first *Pro Skater* successor for 13 years. The title retained the arcadey gameplay of its *THPS* stablemates, but it was nothing short of a disaster with bugged gameplay, graphics on Xbox One and PS4 that were worse than the PS2 equivalents and none of the quality the brand had once epitomised. Unsurprisingly, Robomodo closed shortly after its release.

Luckily, these latter years can be something of a lesson for Activision and Vicarious Visions, which once again finds itself working on *Pro Skater*. This time as the lead developer of the series, VV is leveraging its respectable experience bringing a beloved PlayStation classic into the modern era with the *Tony Hawk's Pro Skater 1+2 Remaster*. "Skating epic lines, dope music, and trying to one up your friends is what hooked me," says Barry Morales, senior producer at Vicarious Visions. "As a fan of the original games, I believe these games remain popular because they had the whole package," he adds, highlighting how the team now has the chance to introduce "a whole new generation" to that addictive gameplay. "Going from a teenager playing the originals to a developer working on the remaster, it's a pretty special experience – it's been an honour for me." And who knows, if it manages to varial heelflip the franchise back into relevance, maybe we'll even see a brand-new Birdman release in the future. It worked for *Crash Bandicoot*, after all... *

PICTURE PERFECT

WITH CATHODE-RAY TUBE TVS OUT OF PRODUCTION AND DWINDLING IN NUMBER, RETRO GAMES MUST INEVITABLY BE PLAYED ON NEWER DISPLAYS. BUT IS THIS COSTING US VITAL VISUAL CHARACTERISTICS OF THE GAMES WE LOVE – AND IF SO, WHAT CAN WE DO TO PRESERVE THEM?

NICK THORPE

Let's not kid ourselves – as far as most of the world is concerned, the humble cathode-ray tube television is obsolete. They're heavy, they're often as deep as they are tall and they aren't particularly energy efficient. The vast majority of them were only intended to show standard-definition TV signals, too. Modern TVs can be large enough to display a life-size human diagonally yet still hang on your wall, they have more pixels than your family has had hot dinners, and you don't even have to plug anything into them to watch YouTube. But they have one nasty little flaw – they're terrible for nostalgia. Hook up a classic console or computer to your LCD TV and you may well be left wondering if your old games really

» [N64] With no native RGB support and a deliberately blurred output, the N64 is a console that needs modding for sharp images.

MINI MELEE

How well do the major mini consoles fare in terms of image options? We rank them from worst to first

7TH

PLAYSTATION MINI

Sony's console forces a bilinear filter giving a blurry look to most games, though high-res games like *Tekken 3* fare better. There are no options at all, so you're stuck with the default look.

6TH

NEO GEO MINI

On its built-in LCD display, SNK's effort is sharp and vivid. But the TV output has a forced bilinear filter, and the only optional extra is an added smoothing effect that looks even worse.

5TH

PC ENGINE MINI

Many games suffer from shimmering scrolling due to uneven scaling in 4:3 mode, and the CRT filter is pretty dark and blurry. The PC Engine GT mode is a nice novelty, though.

looked *that* bad. What's more, you probably won't be able to escape the nagging feeling that games just don't *feel* right.

The good news is that you're not imagining things – modern TVs really do make old games look and feel worse, at least on original hardware. "At first I was somewhat blind to what other small pieces of the classic console experience were being eroded away as I bought newer and newer displays," says Marc Duddleson of the YouTube channel *My Life In Gaming*. "It wasn't until I learned about RGB video, upscalers and PVMs that I realised that yes, input lag is real; yes, the consoles are treated very differently on proper 15kHz CRTs; and no, TV manufacturers don't care about optimising the gaming experience, especially for outdated analogue output consoles." That last part is key. While TV manufacturers put a lot of thought into how to handle the wealth of standard-definition content that's still out there, their choices are always made with film and TV images in mind. Because of that, most TVs have internal scaling systems that have a bias towards smoothing, meaning that pixel art loses definition and appears blurry. Another problem is that consoles didn't adhere to video standards of the day, outputting a low-resolution progressive image that most TVs will treat as an interlaced image, which leads to visual artefacts such as horizontal lines where you should see rapidly flashing sprites. Worse yet, all that processing introduces a noticeable delay between your button presses and visual response, a phenomenon known as 'input lag'.

But if that's the case, surely the way to make our games look good is to simply bypass low-resolution analogue video and play them in high definition on devices designed to output to modern displays? Unfortunately it's not that clear cut either. There are plenty of people who feel that a CRT display is crucial to the look of a retro game, and some argue that by simply showing razor-sharp pixels, many emulated games – and indeed, this magazine – misrepresent the original intent of the graphic artists. "I tend to agree, at least in the case of home console games through the Nintendo 64 era," says TroggleMonkey, the author of the popular RetroArch shader 'crt-royale'. "Not only did every console gamer at the time use a CRT screen (except for the occasional projection screen or rear-projection TV), but the artists knew that and authored their pixel art accordingly. We didn't start thinking of Mario, Link, or Samus in terms of sharp, blocky pixels until the console emulator craze started taking off on PC in the late Nineties."

CRT display advocates feel that the imprecise nature of old analogue video signals, the scanline effect and even the aperture grille on the TV itself are integral to the proper presentation of retro games. Indeed, there are plenty of images showing developers working with a computer monitor and a consumer CRT side by side, and it's easy to see ways in which artists designed their work with the limitations of old display technologies in mind. The most obvious example is the use of dithering, pixel patterns that would blend in composite video to create the illusion of extra colours and even transparency effects. Certain types of graphics can benefit greatly from the CRT look, including higher detail pixel art and particularly digitised sprites, and these can be persuasive examples in favour of the argument that chasing the CRT look is the only way to preserve the experience intended by developers.

However, the big problem is that people's experiences of gaming on a CRT can vary enormously. Firstly, it's important to note that the console itself can play an important part of determining how a game looks, as some systems have distinctive quirks, like the N64's blurring or the Mega Drive's dreadful composite output. It gets more complex when you recognise that different production runs and motherboard revisions of consoles can also deliver drastically different results – just ask any SNES enthusiast that has spent time hunting for the 1CHIP motherboard. Secondly, the type and quality of your cables plays a part. In the beginning, many

» [PC] Some modern releases even include multiple CRT options, recognising the lack of a singular 'true' experience.

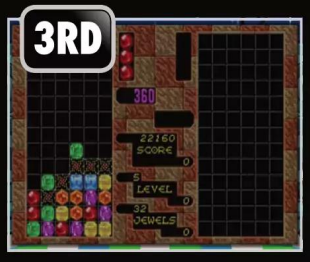
» [Atari 2600] Early consoles only output RF video – tremendously noisy and fuzzy, but details weren't fine enough to be lost.

» [NES] Composite video was an improvement over RF, but still proved to be rather imprecise.

» [NES] When emulating *Darkwing Duck*, it's possible to see window details that are all but lost in composite.

CAPCOM HOME ARCADE

While there's some shimmering here in 4:3 mode, the system's 1080p output reduces its impact. Display options are weak, with only a smoothing filter on offer – no CRT options at all.



MEGA DRIVE MINI

Most games look good by default, with no pixel shimmering problems. However, M2 did both the Mega Drive Mini and PC Engine Mini, so the CRT effect is equally underwhelming.

NINTENDO CLASSIC MINI: SNES

While this offers a pixel-perfect mode, the 4:3 option also avoids shimmering pixels thanks to light interpolation. The CRT mode is a bit on the subtle side.

THEC64 MINI

The CRT effect here is just as subtle as on Nintendo's system – faint scanlines and some light blurring. However, the option to choose pixel-perfect, PAL and NTSC aspect ratios wins the day.

» [Mega Drive] Some artists turned limitations to their advantage – take a look at the dithered light pattern here.

» [Mega Drive] On real hardware, low-quality video output allows the pixels to blend together into a convincing transparency effect.

» [GX4000] *Switchblade* has a distinct look, employing the GX4000's high-resolution, low colour mode.

» [GX4000] This screenshot from real hardware shows that that approach doesn't benefit much from scanlines and blur.

systems typically supported video over RF and nothing else, but by the end of the Eighties they had started to incorporate support for composite AV cables, as well as higher quality S-Video and RGB SCART. RGB SCART in particular was prized by importers for TV compatibility reasons. By the turn of the century, VGA and component cables gave players additional high-quality options to play with. Lastly, there's your display itself. Higher quality consumer CRTs offer sharper images and flatter screens, while individual scanlines tend to be more distinct as your display size increases.

With that in mind, without information on the equipment used it's easier to say what the artists didn't see than what they did see. "While pixel artists used their CRT screens as a guide, that's not to say they really 'mastered' their work to any exact standard," says TroggleMonkey. "Their screens drastically varied in sharpness, scanline strength, phosphor patterns, etc, but probably none of them presented the image as a grid of sharp pixels." Even then, we do know that those sharp pixels were not alien to the developers. Some graphics were drawn exactly that way, such as the graph paper representations of Pac-Man, and old photographs show artists editing zoomed images of their sprites. Ultimately, to know the intentions of artists would require extensive documentation and research that would be impossible to put together today. Even then developers sent their products out into the wild, knowing that players would have vastly different setups at home.

In the absence of a single 'correct' answer, the CRT-less player is ultimately left to decide how to display their games on modern TVs. A quick Twitter poll indicated that around two thirds of our followers prefer sharp pixels, only correcting for aspect ratio. Thankfully, this means that the majority of players are usually well-catered for by today's retro gaming products, as the days of forced blur filters are mostly behind us. The only major worry comes from scaling, as it can be tricky to scale the various resolutions used in old games to 4:3 on a modern set. Unless you can scale the image by an exact multiple of its original resolution on each axis – a practice known as integer scaling – uneven pixel widths give a 'shimmering' effect during scrolling, which wouldn't be present on a CRT. This can be remedied with some light interpolation, at the cost of slightly softer pixel edges you may not notice at a distance.

» [SNES] There's nothing quite like a real CRT, with the distinctive appearance of the aperture grille and signature glow.

» [SNES] That said, modern CRT shaders like crt-royale in RetroArch manage to come surprisingly close.

But for the other third who prefer to use filters and shaders, the news is mixed. The good news is that most retro gaming products on modern hardware do offer some attempt to mimic the CRT look. The bad news is that there is no consensus about what constitutes a good recreation of a CRT, and that visual display options in most official releases often leave a lot to be desired. "In official retro game compilations (or retro-styled indie games), the scanline or CRT simulation effects are poorly implemented more often than not. It blows my mind that sometimes they're just horizontal lines laid over the image that don't even align to the pixel grid! They'll just go straight through the middle of some pixels," says Marc. "There's a pretty decent 'dirty CRT' look in the M2 *Sega Ages* on Switch, at least the ones I've tried. It's okay but not amazing in any of the mini consoles, in my opinion. The *Sega Genesis Classics Collection* on modern consoles has a really bad scanline overlay." Better work is being done by independent developers. "I enjoy when indie games like *Blazing Chrome* or *Fight'N Rage* have options that let you go super over-the-top with the grunginess, glow and CRT curvature. If you're gonna have an artificial CRT look in a game, then I'd say let's go all the way in making it look like composite video on a typical not-amazing consumer CRT. Even though I prefer RGB for my real consoles, there is a certain texture to the 'dirty' CRT look that I enjoy, too."

As is so often the case in the retro gaming scene, the community is doing the best work when it comes to older games. Emulators have come a long way in their ability to mimic a CRT, with RetroArch in particular well-known for its shaders, including crt-royale. "The specific idea first came to me because I wanted to use it personally. At the time I didn't have enough space for my real CRT, and I had been following the development of other programmers' CRT shaders on byuu's emulator forum for quite some time," says TroggleMonkey. "From the start, I knew I personally wanted to recreate the look of more than just one CRT. I was curious about roughly matching both the look of the TVs I actually used as a kid, as well as what my 'dream TV' would have been." The result was that the shader was made highly customisable. "There are a handful of characteristic 'looks' based on what technologies the manufacturer used, as well as myriad minor variations within each style, not to mention the image controls that people would set differently to taste. I've read 4chan comments saying that crt-royale looks nothing like a (or at least their favourite) CRT. That seems to illustrate

TAKE YOUR PICK

THE COMPREHENSIVE COMPARISON YOU'VE BEEN WAITING FOR!

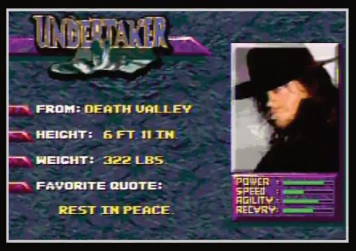
This image, from the Mega Drive version of *WWF Wrestlemania: The Arcade Game*, was chosen as our basis for comparison as it allows us to see how a variety of different image elements are affected by our choice of display technology. For fairness, we used the same PAL Mega Drive II and cables for each hardware capture, and the same cartridge across all tests.

It's first important to look at how cable type affects the image before it's even displayed. RGB preserves the sharpness of the art, which makes text look nicer, while the way the colours blend together via composite creates the illusion of greater colour depth, helping the digitised photo. The pixel art background elements depend rather more on personal taste. Simulations of cable types should be aiming for something like these images before any other effects are added.

UNFILTERED

RGB

COMPOSITE



FUSION 3.64

SETTINGS

Scanlines 75%
CVBS mode

This emulator is still highly useful despite last being updated in 2010, but its default filters are pretty basic by today's standards. The scanline effect is uniform across the image, and the composite video simulation doesn't have any of the rainbow fringing seen on our images from the real console.

OSSC

SETTINGS

Scanline strength: 75%
Scanline hybrid strength: 75%

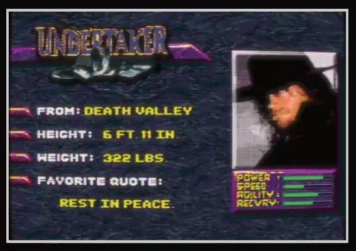
This popular scaling device offers hybrid scanlines that vary in intensity based on the surrounding colours, providing a more natural look which is quite appealing. When we add the RetroTINK 2X for composite support, which the OSSC doesn't offer itself, the artefacts are obviously fully authentic.

RETROARCH

SETTINGS

Borders: Top/bottom
Shader preset: crt-royale
Geometry mode: 2.00

We're using the Genesis Plus GX core here. The default crt-royale shader looks great. Using crt-royale-ntsc-256px-composite, the artefacts don't look quite like those from real hardware, but do come closer than Fusion. The Geometry setting adds curvature, to more closely match our real CRT.

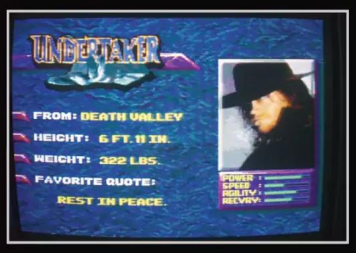


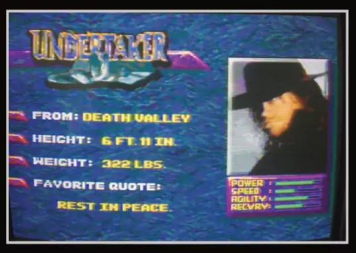
14-INCH WHARFEDALE CRT

SETTINGS

N/A

The small size and less precise nature of the CRT display helps the two video cables look like a closer match. You can still see rainbow fringing on composite, but RGB doesn't look quite as sharp as it does via direct capture to an LCD screen. On a larger display, the difference will be more visible.





THE ULTIMATE CRT

WHY ARE PEOPLE TURNING TO PROFESSIONAL VIDEO MONITORS, AND WHAT SHOULD YOU KNOW BEFORE YOU JOIN THEM?

There's a good chance that if you've hung around the hardcore hardware enthusiasts of our community for a little while, you'll have heard people talking about PVMs. Technically, the term refers to a range of professional video monitors by Sony, but the term is now generalised to include models by other manufacturers. These CRT monitors were designed to be used in broadcasting and other industries in which image quality was a necessity, but are now considered surplus to requirements. As a result, many professional monitors have found their way into the hands of retro gamers, who prize the precision and sharp scanlines of the displays – just look at the images from Darran's own PVM at the top of the page.

Before you run out and buy one, there are some important things to bear in mind as professional monitors aren't as simple as consumer models. Firstly, you should check to ensure that the monitor actually accepts video over RGB. Once you've determined that it does, you'll need to do some research online to see if it will accept sync over composite video as used in many RGB SCART cables, or if you'll need what is a 'sync stripper' – a circuit that extracts a suitable sync signal from composite video, which can be integrated into cables and switch boxes. You'll need to purchase an adapter to convert SCART to the specialised BNC inputs found on these monitors, and since you're unlikely to have many inputs available, you should probably look into getting a good SCART switcher too.

Even with the right knowledge, you should exercise caution when buying professional monitors as they are now quite expensive unless you get lucky. These are heavy, bulky devices that most people won't send via post – you'll likely need to find one for local pick-up. When you do head out, it's worth asking the seller to let you see the device in action, especially if you're worried about compatibility with any of your hardware. Due to the age of the monitors, they may well need some service before long, so if you're not confident in working with CRT displays you should know who you'll contact for repairs in advance.

» You'll need to pick up a BNC adapter. Your consoles won't just plug directly into a PVM like they would a regular TV.

» PVM owners also have to care about sync signals, a hassle not usually faced by gamers using other types of displays.

Thanks to Martin Hinson for supplying the BNC cable photos

▶ how wide the gamut is, or how much I got everything wrong... one of the two."

Elsewhere in the community, skilled engineers are recreating classic hardware using FPGA technology. Consoles like Analogue's Super Nt and Mega Sg include options such as regular and hybrid scanlines, and on the Mega Sg a dither blending option. Then there's the open source MiSTer project, which covers a variety of consoles. "It's more of a DIY thing that requires putting together a lot of pieces, and setting it up might seem complicated at first," says Marc. "But if you don't have access to all of the consoles that you'd like to play and can't justify the rising cost of classic games, but still want to play in an environment that operates similarly to the original hardware, then the MiSTer handles both the consoles and quality scaling in a single device."

Of course, you may wish to hang on to your original hardware, and there are ways to make your old consoles more compatible with modern TVs and get a CRT-style look at the same time. Unfortunately, this is where things can start to get a little expensive. One way to do it is to modify your consoles for HDMI output. Mods such as Hi-Def NES, UltraHDMI for N64 and DCHDMI for Dreamcast not only give you a digital output better suited to a modern TV, they can also add scanlines and other effects – and the results can be great. "When playing on a real console, by far the best artificial scanlines I've ever seen are the 'retro' preset in the Ultra HDMI mod for N64," says Marc.

» [PlayStation] Many players experienced images like this, as composite cables were commonly bundled with consoles.

» [PlayStation] However, AV enthusiasts and importers prized RGB SCART, which was clearer and made importing easier.

» [Xbox One] Compilations like *Rare Replay* now offer CRT simulation options, but the effect can be overblown.

"This is an impressively close approximation of the PVM look, complete with a bit of bloom that slightly expands the image depending on the brightness." However, these kits can cost upwards of £100, and that doesn't include installation.

An alternative approach would be to invest in an external scaling device that is designed for retro games. These accept old analogue video connections and output HDMI, and unlike your TV's internal scaler they offer proper support for low resolutions, display sharp pixels and minimise input lag. Many of these devices include options to mimic the CRT look, such as scanlines and smoothing, including the Open Source Scan Converter, the RetroTINK 2X Pro and the XRGB-Mini Framemeister. This can be a more cost-effective solution if you have plenty of consoles, but getting top image quality generally requires RGB and component cables. That can be quite an investment if you don't already own them, and you'll still require mods to get RGB output when dealing with consoles like the PC Engine or N64. Also, the Framemeister is discontinued and costs quite a bit these days, but is still preferred by some for its high-quality deinterlacing of 480i images, such as those produced by the PlayStation 2.

It can be a daunting field of products for newcomers, but there are some good beginner-friendly options out there. "I think the best starter products out there are the RetroTINK series by Mike Chi," says Marc. "He makes a variety of lag-free scalers that allow you to use composite, S-Video, component, and RGB – you just have to pick the one that supports the signals that you need the most. For example, people who want to play N64 without modifying their console can play in S-Video through a RetroTINK, but the OSSC, which only supports RGB and YPbPr, doesn't allow for composite or S-Video without an add-on like the Koryuu. Systems like the PS2, which almost always output interlaced video, can be smoothed with the RetroTINK output to make the geometry edges look softer and for the interlaced flicker to be less pronounced." However, Marc does point out that for the more adventurous, the alternative can be quite enticing. "If you're ready to commit to RGB and component, then the OSSC is actually not that expensive these days – it's gone way down in price and is not that much more than the RetroTINK products. The OSSC can be *a lot* sharper than the RetroTINK and you have access to much more robust scanline options, but you can go much further with unmodified consoles with RetroTINKs."

» [Dreamcast] Not every console needs simulated fuzz – this near-pristine image was taken from a real Dreamcast via VGA.

» [Dreamcast] For comparison, this screenshot of *Crazy Taxi* was taken using an emulator. Hard to tell apart, aren't they?

But while we can lay out all the options, only you can decide if chasing the CRT look works for you – or if you even want to move to modern LCD displays. "I enjoy both raw pixels and scanlines, I don't see either as superior," says Marc. "Most people are simply going to choose CRT or HDMI, and either choice is totally fine. I don't prefer one over the other. Both provide excellent results if you have the right equipment, and the bigger factor should be which choice is more convenient and cost-effective for your own setup." And despite having created an excellent CRT shader, TroggleMonkey still prefers the vintage technology. "I'd use crt-royale more myself, but I'm enjoying the simplicity of a physical console these days, and I finally have the space for it," he tells us. "I usually play my physical Super Nintendo on my 36-inch Sony WEGA now. A lot of people like PVMs better, but sometimes quantity equals quality, the same way a 28oz porterhouse steak beats a 9oz filet mignon." Despite his own preference for CRTs, he's a strong advocate of following your own aesthetic sensibilities. "In the end, nobody is obligated to care about artist intent at all. You'll have more fun playing with the filters you like, than the ones someone else elaborately justifies." *

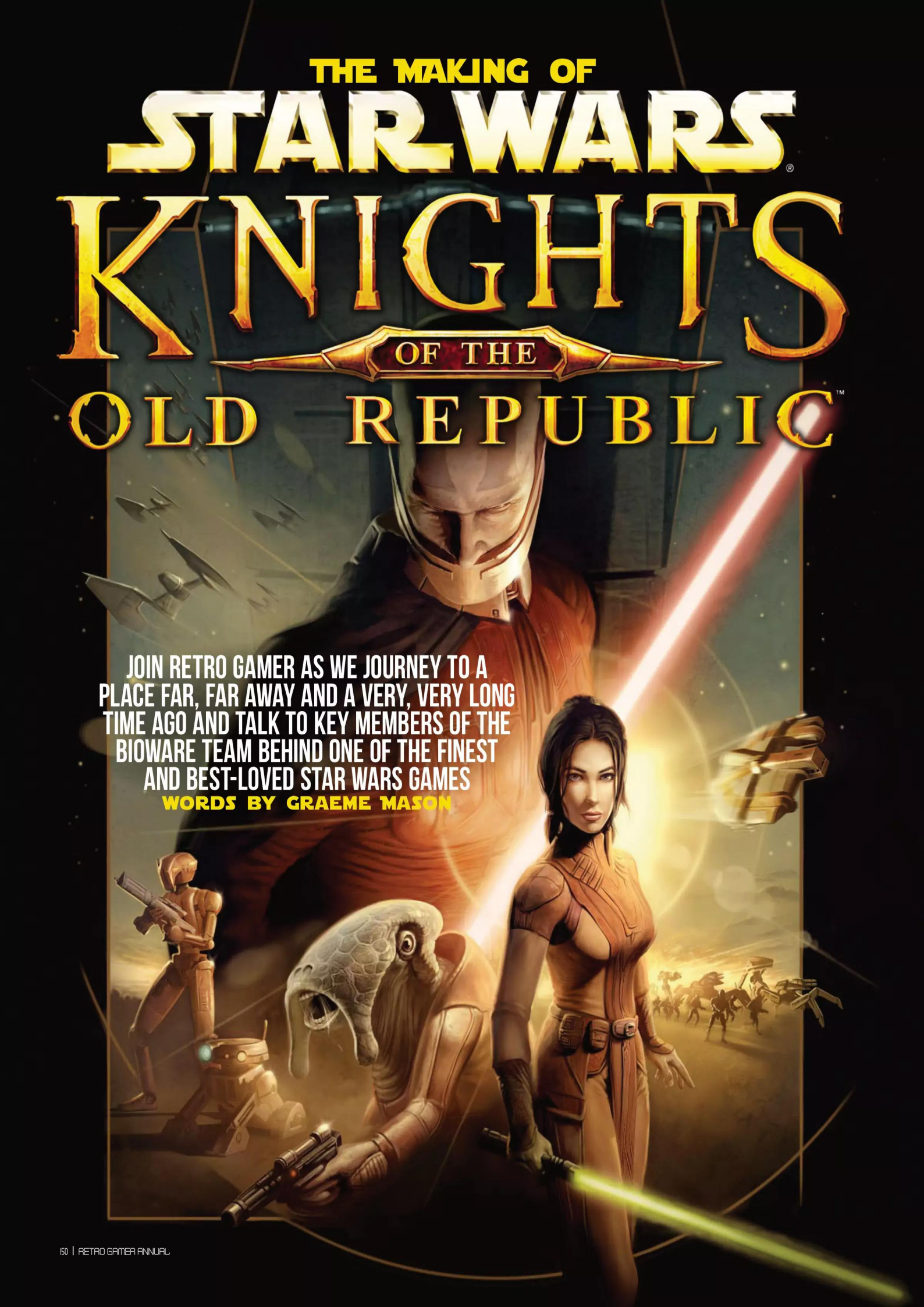
» [Mega Drive] Modern TVs typically butcher retro games with soft scaling and indiscriminately applied smoothing effects.

» [Mega Drive] Using the OSSC, we get considerably greater clarity – and can then add scanlines.

» [Mega Drive] This photo, taken from a high-end consumer CRT TV, shows how prominent scanlines can be.

» [Mega Drive] Applying artificial scanlines to an image displayed via LCD can replicate the look reasonably well.

THE MAKING OF STAR WARS KNIGHTS OF THE OLD REPUBLIC™



JOIN RETRO GAMER AS WE JOURNEY TO A PLACE FAR, FAR AWAY AND A VERY, VERY LONG TIME AGO AND TALK TO KEY MEMBERS OF THE BIOWARE TEAM BEHIND ONE OF THE FINEST AND BEST-LOVED STAR WARS GAMES

WORDS BY GRAEME MASON

IN THE KNOW

- **PUBLISHER:** LUCASARTS
- **DEVELOPER:** BIOWARE
- **RELEASED:** 2003
- **PLATFORM:** XBOX, VARIOUS
- **GENRE:** ROLE-PLAYING GAME

It is 4,000 years before the rise of the Empire, the birth of Luke Skywalker and the Rebel Alliance. Yet the Republic, a democratic mass of aligned systems and worlds, is on familiarly shaky ground as the forces of the Sith Lord Darth Malak plague the galaxy. Eager to assume despotic control of the many systems, Malak is waging war against the Republic and its guardians, the Jedi. *Knights Of The Old Republic* opens as his forces ambush the Republic space cruiser the Endar Spire, forcing the player, in a scene familiar to the beginning of *Star Wars: A New Hope*, to take flight via an escape pod, along with war hero and top pilot Carth Onasi. Beneath the stricken Endar Spire sits Taris, and it is here that the adventure, spanning several worlds, encompassing multiple missions and numerous colourful characters, begins with a search for a Jedi named Bastila Shan. Across some of the realms we already know and love, and employing a very *Star Wars* theme of dark versus light, this backdrop to *Knights* may appear conventional on first examination; yet underneath the patina is an RPG that expands the lore of the *Star Wars* universe while presenting a superb gaming experience that enraptured both fans and those new to George Lucas' legendary saga.

Long before Disney began to create its variably successful *Star Wars* spin-offs, videogames were spinning a whole world of sci-fi built around that galaxy far, far away. "We received a cold call from Simon Jeffrey, then director of development at LucasArts," remembers Greg Zeschuk, BioWare cofounder and executive producer on *Knights Of The Old Republic*. "He reached out to us to see if we would be interested in doing a *Star Wars* RPG, and it was a true cold call – we'd never met or even spoken to him before." BioWare was just beginning to wrap on *Neverwinter Nights*, an ambitious role-playing game that encompassed a brave new engine for its fantasy tale. "It was a great coincidence," continues Greg, "as we were in the process of selecting a next project. It was an easy decision for us and our team."

By 2000, BioWare was an exhilarating company to work for, having already forged a gigantic reputation in the RPG genre thanks to the marvellous *Baldur's Gate* and its sequel, *Shadows Of Amn*. But the developer had very real shadows of its own to contend with. "I'd say it was always turbulent, but those early days were pretty exciting as we were always doing new things and learning about the industry," Greg says. *Baldur's Gate*'s spiritual follow up, *Neverwinter Nights*, became the most contentious project of BioWare's then

"HE REACHED OUT TO US TO SEE IF WE WOULD BE INTERESTED IN DOING A STAR WARS RPG, AND IT WAS A TRUE COLD CALL – WE'D NEVER MET OR EVEN SPOKEN TO HIM BEFORE"
GREG ZESCHUK

» Greg Zeschuk cofounded BioWare, and we speculate he could be an actual Jedi Knight.

» James Ohlen worked at BioWare for 22 years before starting Arcanum Worlds in 2018.

» Drew Karpyshyn worked on the story for *KOTOR*, and has written a number of *Star Wars* novels.

DEVELOPER HIGHLIGHTS

BALDUR'S GATE
SYSTEM: PC , MAC
YEAR: 1998

NEVERWINTER NIGHTS (PICTURED)
SYSTEM: PC, MAC
YEAR: 2002

SYSTEM: PC, XBOX 360, PLAYSTATION 3
YEAR: 2009

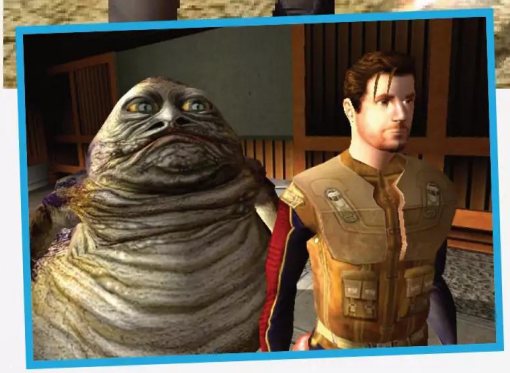
» [PC] Fan favourite HK-47. Do we detect a hint of sarcasm?

» [PC] It might be set way before the movies, but locations and characters still look unmistakenly *Star Wars*.

short history, mainly due to the technical boundaries the developer was trying to push, and the troubles at publishing partner Interplay. Spilling over into *Neverwinter*'s development schedule, a new publisher had to be found as work began on *Knights Of The Old Republic*. "From the beginning, BioWare was a multi-project company, so we were always working on balancing how to do multiple games at once," explains Greg. "There's always a finite amount of talent available, so we couldn't do them all full blast simultaneously." The core team of *Knights* would be constructed from a variety of sources, as the new scope warranted. *MDK2*, *Baldur's Gate II* and *Neverwinter Nights* personnel all combined to form *Knights*' squad, and as the *Neverwinter* development wound down, focus fully shifted to the *Star Wars* game, but not before creative lead James Ohlen and his team of writers and designers were sequestered to help get the fantasy RPG over the line.

Following that first initial contact with LucasArts, the first major decision was where, or rather when, to set the game. "We were given the option of setting it either between *Episode V* and *Episode VI*, or in the pre-history thousands of years before the movies," reveals Greg. "Understanding a bit about publisher and licensor management, as well as being given the opportunity to create some *Star Wars* canon, we chose 4,000 years before the movies, and were given a lot of latitude in what we created." A useful asset, and Greg smiles when we ask how far that latitude stretched. "The best comment from LucasArts in this context was: 'Just don't blow up any planets we'll need later.' Lead designer James Ohlen confirms the enthusiasm the team had for setting *Knights* long before Luke, Han and the rebellion. "The Old Republic era allowed us to tell a story where the fate of the galaxy was at stake, just as it was in the original trilogy of movies. One of my beliefs is that when working in other people's universes, it's important that you have the freedom to create

» [PC] This is not one of those *Star Wars* game without lightsabers.



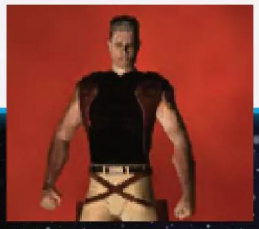
» [PC] Who's that Hutt? Well… it's not Jabba.

"REMEMBER, THE LAUNCH TOOK PLACE IN THE DAYS WHERE CONSOLES WERE CONSIDERED THE FUTURE, SO WE THOUGHT IT WAS A BETTER BUSINESS DECISION TO DO LEAD ON CONSOLE"

GREG ZESCHUK

A GALAXY OF HEROES

THE PLAYER CAN RECRUIT SEVERAL CHARACTERS TO ACCOMPANY THEM ON THE EBON HAWK AND BEYOND. HERE'S WHAT TO EXPECT FROM EACH HERO



CANDEROUS ORDO

RACE: MANDALORIAN
HOME PLANET: ORDO

BIO: A veteran of the Mandalorian Wars, Canderous Ordo is first encountered on the planet Taris, plying his trade as a gangster's enforcer, before joining the player's team in order to find fame and excitement. An honourable warrior, he is a skilled fighter worth taking on the missions where you expect trouble (so most of them).

HK-47

RACE: ASSASSIN DROID
HOME PLANET: N/A

BIO: Constructed by Darth Revan with the sole purpose of assassinating key members of the Republic, HK-47 is one of *Knights*' more memorable characters, mercilessly eliminating its targets – which it calls 'meat bags'. Prone to killing its masters, HK-47 falls into your hands on Tatooine… erm, good luck.

CARTH ONASI

RACE: HUMAN
HOME PLANET: TELOS IV

BIO: An ace pilot and fighter with a roguish appearance, there's a little bit of Han Solo to this human. That's where the comparison ends, however, as Carth is a brave soldier of the Galactic Republic, meeting the protagonist on the Endar Spire before the pair elude Sith forces and escape to the nearby planet of Taris.

MISSION VAO

RACE: TWI'LEK
HOME PLANET: TARIS

BIO: The beautiful and cobalt orphan Mission is first met on Taris, at a bar called Jayvar's Cantina. Accompanied by a Wookie named Zaalbar, the pair provide intelligence and muscle to the player's mission before joining the team aboard the Ebon Hawk following the destruction of the doomed Taris via Sith bombardment.

» Early artwork demonstrates the scale and beauty BioWare was aiming for.

» [PC] You can't have Tatooine without Jawas and the nefarious, yet easily spooked Sand People.

stories as epic as what fans had experienced in other mediums." Drew Karpyshyn, a writer with extensive experience of the genre already thanks to his excellent work on *Baldur's Gate II*, its expansion *Throne Of Bhaal* and *Neverwinter Nights*, was predictably a busy man once more as development on *Knights* began in earnest, and the scope for new characters and stories ballooned. "The majority of my time went to the story, character and narrative side of things," he says. "We had a huge amount of dialogue – roughly the equivalent of 15-plus movies – so we were kept quite busy!"

Leaving the complex character depth and plot nuances aside for a moment, it's with Microsoft's Xbox that the story of *Knights Of The Republic* officially began. Eager to get a footing on platforms other than the PC, BioWare had already dabbled in console development with the Sega Dreamcast version of *MDK2*. "Initially we had PC and Xbox versions of *KOTOR* running neck and neck during development," recalls Greg. "But we elected to have the Xbox lead SKU. Remember, the launch took place in the days where consoles were considered the future, so we thought it was a better business decision to do lead on console." As BioWare lacked the staff and support to perform a simultaneous release, the focus was on the sturdy brick-like Xbox console. Along with Ray Muzyka, Greg liaised with *Knights*' project director Casey Hudson, bouncing ideas with him and the team, playtesting, reviewing progress and ensuring everything was tickety-boo as far as the mighty LucasArts was concerned. "Mike Gallo was our producer at LucasArts and he worked extensively with Casey; they always had a good idea of what we were doing," reveals Greg. "The fact we set the game outside the main movie storyline prevented too much detailed review of what we were building – I don't think LucasArts ever pulled rank on us for anything we built."

And what an epic build it turned out to be, from its dramatic beginning, Sith fighters buzzing around the tormented Republic starship, the Endar Spire, to the shocking destruction of Taris and the game's fateful and famous reveal regarding the player character. Along the way, friends will be made, and friendships will be betrayed, as the Dark side of the Force inveigles itself into every facet of the galaxy. But before that, there's the traditional element of character creation. In *Knights Of The Old Republic*, this represents a halfway point, in retrospect, between the complexities of *Baldur's Gate* and *Neverwinter* and the smoothed-out process present in the *Mass*

ZAALBAR

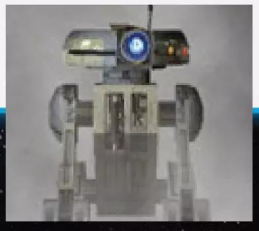
RACE: WOOKIE
HOME PLANET: KASHYYYK

BIO: A relatively young Wookiee, exiled from his homeworld of Kashyyyk following a disagreement with his brother, Zaalbar strikes up an odd friendship with Twi'lek Mission Vao on the planet Taris. Along with his friend, Zaalbar agrees to help the hero's search for the Star Forge and bring an end to the conflict.

BASTILA SHAN

RACE: HUMAN
HOME PLANET: TALRAVIN

BIO: Strong of character and honour, Bastila Shan also possesses a powerful Force power known as Battle Meditation, the ability to inspire colleagues while demoralizing enemies. Commander of the Endar Spire, Shan has a key role in the player's mission, with locating her on Taris the first main mission of the game.



T3-M4

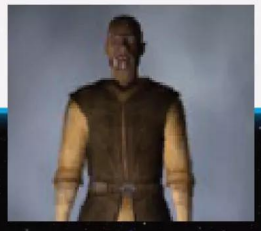
RACE: UTILITY DROID
HOME PLANET: TARIS

BIO: Don't let T3's cute appearance fool you – an expert in computer slicing and manipulation, this little droid is a highly capable hacker, and is vital to the success of the player's mission. T3 leaves its home planet of Taris aboard the Ebon Hawk, thus escaping a life of wrong-doing for crime lord Davik Kang.

JUHANI

RACE: CATHAR
HOME PLANET: TARIS

BIO: Sylphlike and feline in appearance, Juhani often struggles to balance her devotion to the Force with the fierce nature endemic to all Cathars. Juhani joins the squad upon discovering the Star Map, and is notable for being the first openly gay character written specifically for the *Star Wars* universe.

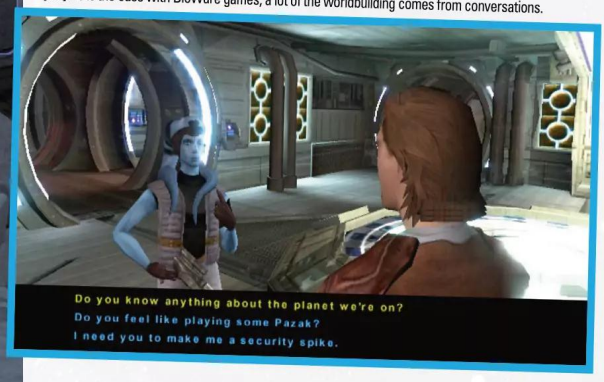


JOLEE BINDO

RACE: HUMAN
HOME PLANET: KASHYYYK

BIO: Self-exiled on the planet of Kashyyyk after a ferocious battle with his wife Nayama who had fallen to the Dark side, Bindo is discovered during the game in the Shadowlands region. A touch too emotional to be a true Jedi warrior, Bindo becomes friends with the hero, and proves to be a valuable member of the Ebon Hawk team.

» [PC] As is the case with BioWare games, a lot of the worldbuilding comes from conversations.



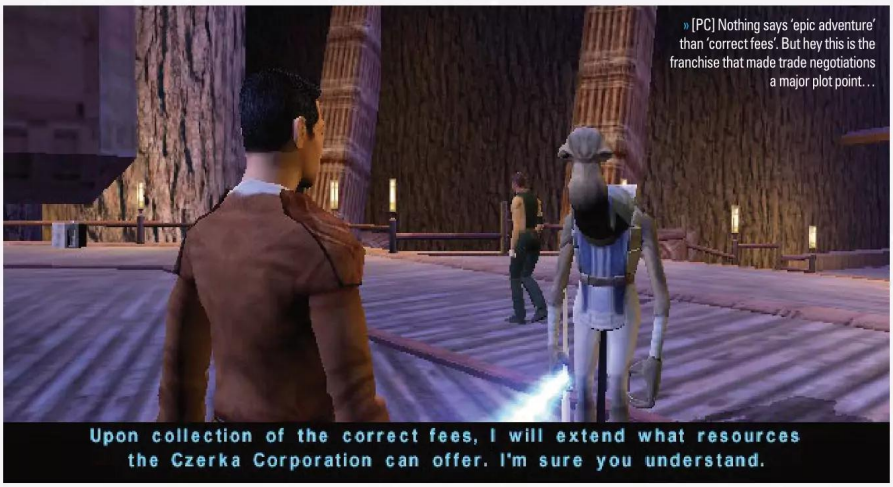
"WE DIDN'T WANT IT TO LOOK PRIMITIVE, BUT WE ALSO WANTED IT TO LOOK LESS REFINED THAN THE MODERN STAR WARS MOVIES. DEREK WATTS AND CASEY HAD THIS AS A HUGE TASK FOR THE FIRST FEW MONTHS OF DEVELOPMENT"

GREG ZESCHUK

Effect games. There are three basic classes, skills statistics and tiered feats, followed by Force powers that are unlocked once the player becomes a Jedi Padawan. And despite the popularity of *Baldur's Gate*'s Infinity engine, it was clear to BioWare that technology was moving on.

Knights would need a significantly different, more personal display, even if the combat was to remain lodged in the pause-action-unpause style of its previous games. "My memory is a little vague on this," Greg offers cautiously, "but if I recall correctly we initially tried to implement a real-time system, but soon realised it wasn't practical when managing your followers and your main character simultaneously. It took lots of tweaking to look visually good when running in real time, but also being able to give the player the ability to manage every single action. We went to 'pause-and-play' quickly, but it was still tricky!"

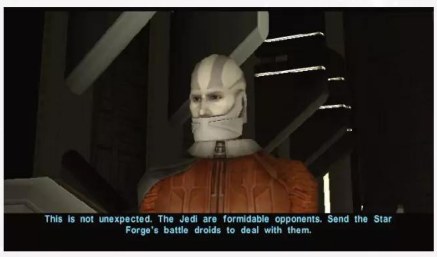
With art director Derek Watts, lead animator Steve Gilmour and programmer David Falkner rounding off the principal creatives, it was over to Drew Karpyshyn and his team of writers to get to work devising the hours of characterisation and plot that would rightly become the highlights of *Knights*. "We were excited by the idea of a galaxy with multiple Jedi and Sith at war, and also in exploring the way the Light and Dark sides of the Force came into conflict, or could even work together," Drew remembers. Each writer was responsible for certain characters, while Drew and James oversaw the process, ensuring the game contained a broad range of archetypes from both *Star Wars* lore and races as well as individual personality types. For the look of the game, the team settled on a mix of styles, acknowledging the timeline, yet attempting to weld a sense of familiarity to the setting. "The idea of how to depict an earlier version of the *Star Wars* universe was one of the trickier things we worked on for a quite a while," recalls Greg. "We didn't want it to look primitive, but we also wanted it to look less refined than the modern *Star Wars* movies. Derek Watts and Casey had this as a huge task for the first few months of development."


Upon collection of the correct fees, I will extend what resources the Czerka Corporation can offer. I'm sure you understand.

» [PC] Nothing says 'epic adventure' than 'correct fees'. But hey this is the franchise that made trade negotiations a major plot point…

Yet it is *Knights Of The Old Republic*'s cast of eclectic characters, nine of whom can be recruited into the player's team, that most resonated with fans. From the conflicted Jedi Bastila, to weary veteran Jolee Bindo and Republic hero Carth Onasi, each character is so much more than a mere facade, with a latent backstory, motives and traits both positive and negative apparent in all. And as in all good *Star Wars* stories, the villain is both fearsome and pitiful. "Most of my focus was on Bastila, Mission Vao and Zaalbar," says Drew, the latter two an unlikely pairing of Twi'lek and Wookiee. "But I personally feel Malak was a great villain and – in the end – a somewhat tragic figure. I always enjoyed writing his scenes and dialogue." For many fans, the ruthless assassin droid, HK-47, remains a favourite. Dubbing all organic life as 'meat bags', the copper-coloured robot is an entertaining companion on missions, not to mention its excellent combative skills. "HK-47 is hilarious!" exclaims James Ohlen. "But Drew initially didn't think that Dave [Gaider, voice artist] and his take on the character were going to work. But when he sat in for the recording session, he realised what Dave was going for, and was pretty sure HK was going to be the most popular character in the game."

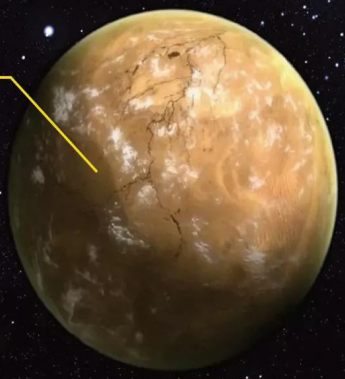
» [PC] The villain of the piece, Darth Malak.



BioWare's collaborative style, encouraging discussions, but seldom disagreements, was to the fore with *Knights Of The Old Republic*. "While Drew would have come up with the overall story, he would have bounced it around with all the other writers and designers," notes Greg. "There is always a story owner, but also lots of good feedback to consider." That story arc would focus on the most traditional of *Star Wars* themes, the balance between the Light and Dark side of the Force, imbued within the player character at

A GALAXY TO SAVE

SOME FAMILIAR NAMES AND NEW LOCATIONS, THESE ARE THE KEY PLANETS YOU CAN VISIT IN KNIGHTS OF THE OLD REPUBLIC



TATOOINE

This barren and harsh desert planet appears relatively unchanged from its frequent appearances in the *Star Wars* franchise, and is still infested by smugglers and pirates. Home to a somewhat bizarre Czerka Corp mining facility, this desolate world nevertheless contains one of the vital star maps.

DANTOOINE

Having escaped the destruction of Taris, the Ebon Hawk travels to Dantooine, home of the Jedi enclave. It's a green and rustic planet, and here the player must train in order to become a Padawan. There are numerous side quests and a Rakatan temple that reveals crucial information regarding the location of the Star Forge.

TARIS

Located in the Outer Rim territories, Taris is the dense ecumenopolis (city) planet that the player first arrives at following the Sith capture of the Endar Spire. Conquered by the Sith, Taris is placed under martial law and ultimately ravaged in a terrifying bombardment from which it takes decades to recover.

KASHYYYK

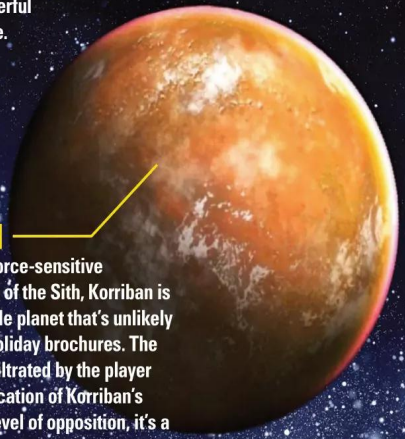
Kashyyyk is the home world of the Wookiees, a lush and verdant planet dotted with gargantuan trees. Here lies another star map and a whole bunch of walking carpets, some of whom don't take too kindly to an upstart Jedi and their mates rolling in. The Czerka Corporation are in force here, and you'll need to stump up 100 credits just for the honour of landing.

MANAAN

A primarily Ocean planet, Manaan is the home of an aquatic race known as the Selkath. A peaceful species, the Selkath manufacture and sell a healing plant to the Sith and Republic, both of whom have a base on the planet. An interesting set of locations, surrounded by sleek grey walls and the powerful crashing waters outside.

RAKATA PRIME

Given the mysterious nomenclature of 'Unknown World', Rakata Prime is the home of the ancient Rakata race. Technologically advanced, and deeply ensconced within the Dark side of the Force, the Rakata enslaved the galaxy during a reign known as the Infinite Empire. It is the location of the Star Forge, a powerful device that must be destroyed in order to save the present galaxy from a similar fate.



KORRIBAN

Infested with vicious Force-sensitive Terentateks and the home of the Sith, Korriban is a desolate and inhospitable planet that's unlikely to feature in any galaxy holiday brochures. The Sith Academy must be infiltrated by the player in order to discover the location of Korriban's Star Map, and given the level of opposition, it's a mission best left to last.

KOTOR: THE MOVIE

MIXED THOUGHTS FROM THE DEVELOPMENT TEAM ON A POSSIBLE CINEMATIC OUTING FOR THE OLD REPUBLIC

When *Buzzfeed* announced back in May 2019 that several sources had revealed a *Knights Of The Old Republic* script was in development, there was predictable excitement generated among fans. With Disney having scaled back its *Star Wars* spin-offs following the disappointing box office of *Solo*, the immediate appearance of a movie set 4,000 years before every cinematic outing so far seems unlikely. But what does the team behind the game make of the potential? "I think it would be great, but I don't think it should be modelled after the game, which has a story purposely derivative of the movies," says James. "One example of this is the showdown, which I ripped from the lightsaber duel at the end of *The Empire Strikes Back*. People don't notice because they are the protagonist in an interactive game." Writer Drew Karpyshyn agrees. "It would be interesting to see, but honestly I don't know if it's a good idea. *Knights* was written as a game, and has too many characters and complexity for a movie, so huge chunks would end up getting cut." With much of the appeal of the game coming from its interactive nature and the role of the player within it, a game set 4,000 years in *Star Wars*' history would require a new plot and characters. "I think it would be cool," says Greg, "but I'm not really expecting anything. Many things are optioned for movies, but few are actually made."

» [PC] Arriving too late to save the crew of the Endar Spire.

a much higher level than they might at first suspect, which brings us neatly to *Knights Of The Old Republic*'s famous twist, a jaw-dropping moment that is preceded by a series of subtle hints that point towards the true origin of your very own character. For those who haven't played yet, beware, as here spoilers there are. "I liked the twist," remembers Drew, "but I knew it would all come down to execution and presentation. If you tell people a twist, it always sounds forced, clunky or blatantly obvious; the real trick is to give them a story that lays the groundwork for the twist, while also being entertaining on its own." The result, at least in *Knights*, feels natural yet surprising, instead of strained or incongruous, as the player is revealed to be Darth Revan, former ally of chief antagonist Darth Malak, memory-wiped by Bastila Shan, and now in the service of the Republic as a mere footsoldier. "The idea of the main character being the villain was something that came from a brainstorming session I had with Cam Tofer," recalls James. "The twist that ended up in the story was mostly me and Drew watching *The Sixth Sense* and *Fight Club* and using them as templates for how to do that kind of twist." The former movie in particular taught BioWare the value of foreshadowing the abrupt turn of events, leaving enough clues so that alert and focused players could figure out what was happening, thus avoiding the revelation feeling like it had come out of the blue. "I was hyper-focused on that," notes Drew, "dropping these clues and lines in at various critical path junctures, then explicitly referring back to them during the actual moment when you discover your true identity."

> "I'M MORE A CONTENT DESIGNER THAN A GAME DESIGNER, SO I WANTED TO FOCUS ON THE CONTENT, RATHER THAN DEVELOPING A NEW GAMES SYSTEM. THEREFORE, USING NEVERWINTER AS A JUMPING OFF POINT MADE A LOT OF SENSE"
> **JAMES OHLEN**

With the game utilising *Neverwinter Nights*' Aurora engine – branched off and customized along with elements of *MDK2* – the technical development of *Knights Of The Old Republic* hit little more than the usual highs and lows of creating an ambitious videogame on relatively new hardware. "We had already developed choreographed combat in *Neverwinter Nights*, which was integral to getting across lightsaber duels," James recalls. "I'm more a content designer than a game designer, so I wanted to focus on the content, rather than developing a new games system. Therefore, using *Neverwinter* as a jumping off point made a lot of sense." As development began to march slowly, but steadily, towards the end straight, James focused on polishing the game via his own playtesting, internal testing and soliciting feedback from LucasArts. "I'm pretty sure I played *Knights* more than anyone else before it shipped," he jokes. "But I was really tired of the game by the time it was done." Meanwhile Drew Karpyshyn, having overseen the key intricacies of storyline and characterisation, tried to ensure inconsistencies were spotted as soon as possible in order to

» [Xbox] An early Jedi-Sith clash aboard the stricken Endar Spire.

» [PC] The Ebon Hawk's design echoes a more famous 'hunk of junk'.

» [PC] Preparing to slice up a Tusken Raider on Tatooine.

minimize any impact on development. But with a game the size, ambition and innovation of *Knights*, there were two notorious aspects of the industry that could not fail to rear their ugly heads: crunch and bugs. "Every BioWare games has thousands of bugs!" exclaims James. "And we always spend months squashing them." Stomping on digital insects aside, it was the nascent Microsoft hardware that often caused issues, specifically its CD drive, as Greg explains. "One of the main issues we faced – and one Microsoft was loathe to talk about – is that we streamed off the Xbox CD disc in real time, especially for the voices, and what we didn't know was that the Xbox didn't have consistent disc performance." Faced with troubleshooting the various issues, Microsoft revealed that they had used multiple models of disc drives within the console, some of them more reliable than others, leaving BioWare with little option but to plough on regardless.

And then there's the crunch. Drew Karpysyhn recalls in particular the rush towards the end of *Knights*' development. "BioWare crunch is almost always brutal," he laments. "Many people on the team put in months of 80-plus hour weeks, and towards the end some people were working 100-plus hours per week. We tried to limit it to six days per week, leaving at 9pm on weekdays and 6pm on Saturdays, with Sundays off. However, many people ignored those hours and worked overtime, including all of the senior people. In the final few weeks, I put in several 30-plus-hour ▶

KNIGHTS OF THE MOBILE REPUBLIC

IS THE FORCE STRONG WITH THIS MOBILE CONVERSION?

By the miracle of modern technology, it is now possible to have the complete *Knights Of The Old Republic* experience on the go, thanks to Aspyr's excellent port for iPad, iPhone and Android. Given a sparkling sheen, the graphical lustre in particular shines on these devices, with the expanses of planets such as Tatooine and Manaan looking impressively lush and azure. Adapted for use with touch controls, the game also works well, with the player able to dart their squad around each world with ease, wielding lightsabers and blasters against the numerous enemies. Almost every other aspect of the original game survives intact, only now you can travel to the Sith Academy on Korriban while on the bus, or take on Darth Malak and his Sith horde while waiting at the dentist. Grounded with the same epic plot and characters, *KOTOR* mobile is a fantastic game for those looking to relive one of the finest *Star Wars* games, or to play it for the very first time.

THERE IS ANOTHER...

THE OLD REPUBLIC PAID HOST TO A COUPLE MORE GAMES

Following the success of *Knights Of The Old Republic*, BioWare was succeeded by Obsidian for the sequel *The Sith Lords*. Utilising the same engine, Odyssey, the game follows a new character known as 'The Exile', an exiled Jedi Knight at a time when the order has almost been wiped out by the evil Sith. While graphically similar, Obsidian made several tweaks to the style of gameplay pioneered by the first game, including a smoother party system and a large range of new Force powers. Once more relying heavily on characterisation, interaction and plot to drive the experience, the player's teammates can now be influenced directly by their actions. *The Sith Lords* was released in 2004 on Xbox, and early the following year on PC, to general high acclaim, despite criticisms that it was similar to the original. Work on a third single-player game began in 2004, but failed to proceed beyond early concept art, story, world and quest designs. Then, at 2008 E3, BioWare and LucasArts confirmed they were working on a long-rumoured MMORPG set in the Old Republic. Released in 2011, *Star Wars: The Old Republic* is set 300 years after the events of the first two games as another war threatens to consume the galaxy. Players are able to join either the Jedi or Sith, while offering a moral complexity beyond this binary choice. Phenomenally successful upon release, *The Old Republic* has since received several expansions and seen a move from subscription to a free-to-play model – and it still operates today, making it an ideal way to dip back into this mysterious and fascinating era of the *Star Wars* franchise.

KNIGHTS OF THE OLD REPUBLIC: THE TRIVIA FILE

FIVE MORE SNIPPETS OF INFORMATION, FRESH FROM THE COMPUTER BANKS OF THE EBON HAWK

1 GameCube and PlayStation 2 versions were never considered, due to Microsoft exclusivity.

2 An early idea was to have the player be a clone of Revan, before LucasArts told BioWare that clone stories were off the table. A few months later the next film, *Attack Of The Clones*, was announced.

3 Just before LucasArts contacted BioWare, James Ohlen and Ray Muzyka were mulling over a licence of a relatively unknown book at the time called *A Game Of Thrones*.

4 Members of *KOTOR*'s cast appeared in BioWare's *Mass Effect* – notably Jennifer Hale (Bastilla) and Raphael Sbarge (Carth).

5 Many of *KOTOR*'s characters came from James Ohlen's childhood *Star Wars* tabletop campaign by West End Games.

» [PC] Here we are exploring the prestigious Starfleet Academy.

» [PC] Familiar locations appear in *Knights*, such as the Wookiee homeworld of Kashyyyk (bless you).

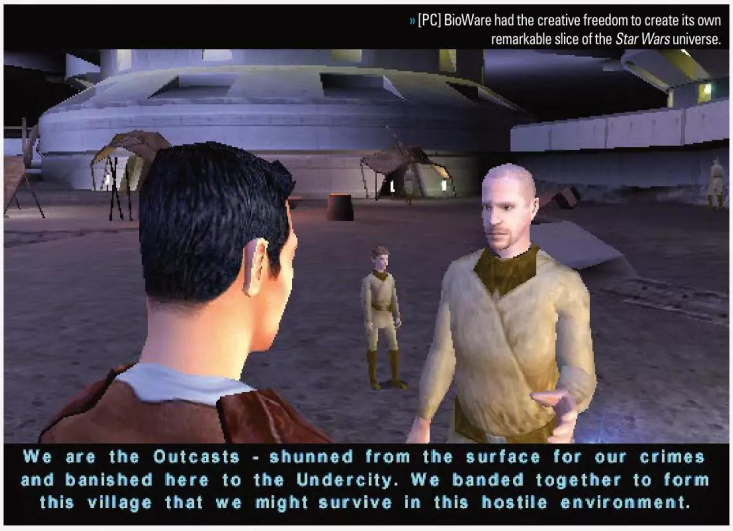
shifts as we scrambled to get it approved for the gold [master] disk." While not quite as grave, James acknowledges the urgency to finish off *Knights* was critical towards the end. "There was crunch, but we got the game done before summer, so it wasn't too bad. But if we had pushed into summer, I think most of us would have lost our minds." Nevertheless, in a mighty fine videogame that had its development stretched right to the very limit, James still harbours some regrets. "It would have been great to get more of the epic battles that are so important to why *Star Wars* is awesome – the 'wars' part is so integral to the franchise," he notes. Despite the wonderful depth to *Knights*, it's hard to disagree given most fans fell in love and were mesmerised by imposing Star Destroyers, waspish X-wing fighters and the gangling, ponderous AT-ATs of *The Empire Strikes Back*. It's a somewhat harsh analysis, not shared by Greg, or Drew. "Considering it was one of BioWare's biggest hits, won multiple Game Of The Year awards and is still beloved by millions, I don't think I can have any regrets," says the latter.

> "THERE WAS CRUNCH, BUT WE GOT THE GAME DONE BEFORE SUMMER, SO IT WASN'T TOO BAD. BUT IF WE HAD PUSHED INTO SUMMER, I THINK MOST OF US WOULD HAVE LOST OUR MINDS"
> **JAMES OHLEN**

Upon release, *Knights Of The Old Republic* was indeed a worldwide smash hit, and a pleasant surprise to many fans jaded by the prequel trilogy episodes *The Phantom Menace* and *Attack Of The Clones*. And it proved a relief, albeit a temporary one, at BioWare. "We didn't really have time to sit back and enjoy [the success]," says Drew. "By then, we were already dealing with the next crisis, whether it be *Neverwinter Nights II*,

» [PC] Combat took cues from *the D&D* system found in BioWare's previous RPGs.

» [PC] BioWare had the creative freedom to create its own remarkable slice of the *Star Wars* universe.

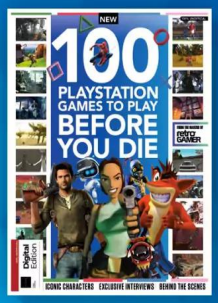

We are the Outcasts - shunned from the surface for our crimes and banished here to the Undercity. We banded together to form this village that we might survive in this hostile environment.

Jade Empire, Dragon Age – we had a lot going on." While James admits he "had no idea how people were going to react to it", executive producer Greg, also cofounder of the renowned developer, says, "I'm proud of all our games – it's difficult to even release a game, so to have made a number of beloved games that were also commercially successful is a pretty shocking thing. And I think without doubt that *Knights Of The Old Republic* is one of our best, and certainly the right game at the right time." With *Knights* a triumph, LucasArts' thoughts turned inevitably to a sequel, although sadly the continuing storyline was not taken up by BioWare. "They [LucasArts] wanted a tight timeline for the sequel, and we didn't feel we could deliver what we wanted within that timeframe," says Greg. "What we did do, was connect them to the folks at Obsidian and ensure that the process went smoothly, so there was another game in the series for fans to play." Set five years after the events of the first game, *The Sith Lords* sees the vengeful Sith tighten its grip on the galaxy, while introducing several new elements such as fresh Force powers and more interactive team characters. Packaged up in a familiar engine, it's a sincere case of more of the same, yet neatly wrapped the story, and while not in the league of the original's sales figures, was another hit nonetheless.

It was that original that transformed RPGs, from the nerdy trappings of the *Baldur's Gate* games to modern, impressive graphics, migrated away from the traditional PC home of the genre. "I think it's a great game, and it had a huge impact on BioWare and the CRPG industry as a whole," Drew notes. "Yes, the graphics may be a bit dated now, but the story still stands up today." The combination of the *Star Wars* IP, story, characterisation and the epic sweep that BioWare infused into *Knights* has made it the classic it is quite rightly regarded as over 15 years later. "*KOTOR* influenced what I wanted to do with *Dragon Age*, and also led to *Star Wars: The Old Republic*," concludes James Ohlen. "And I'm so very proud of it. My son is a big *Star Wars* fan, so it's great that it's so highly regarded by so many fans of *Star Wars*." For Drew Karpyshyn, his work on *Knights* led to a career that has encompassed original sci-fi epics *Mass Effect* and *Mass Effect 2*, the influence on which can be clearly seen. "It also helped land me my first *Star Wars* novel, *Darth Bane: Path Of Destruction*," he says, "so it really helped to kick my writing career to another level. I'll always have a soft spot in my heart for *Knights Of The Old Republic*."

Whether you choose the Light side or the Dark, *Knights Of the Old Republic* remains a hell of an adventure, full of beautiful worlds, brave heroes, dastardly villains and heart-breaking betrayal. "Our goal was always to deliver a great game," smiles Greg Zeschuk. "And sometimes that takes a little longer than expected. But if you do something amazing in the end, it's always worth it."

Discover the origins of all your favourite characters



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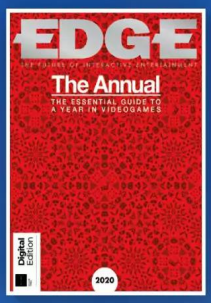

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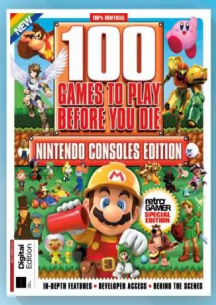

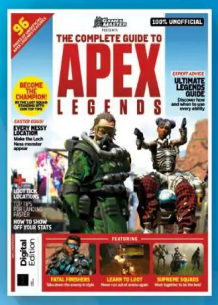

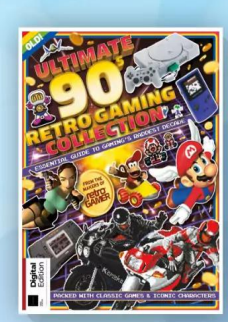

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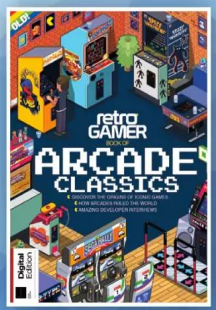

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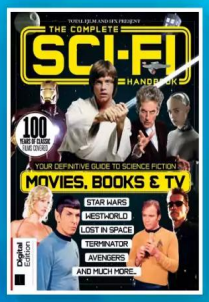

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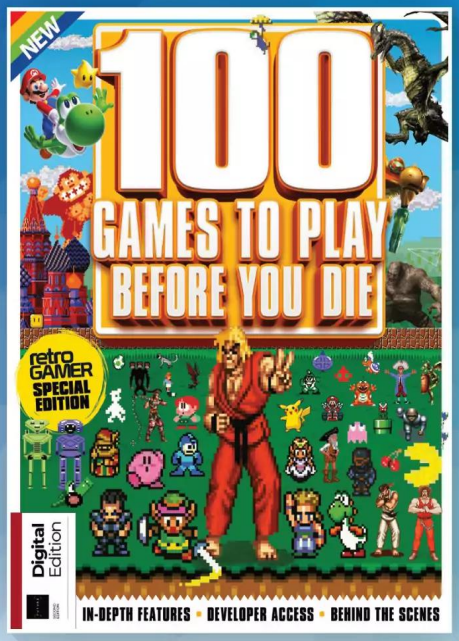

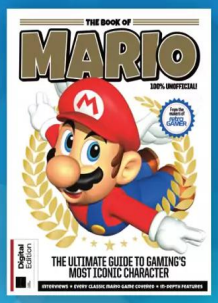

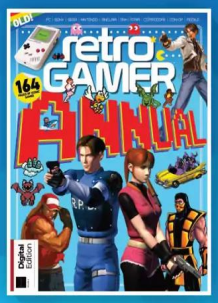

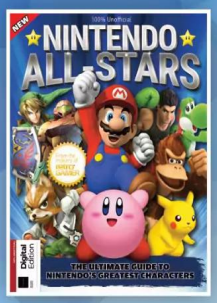

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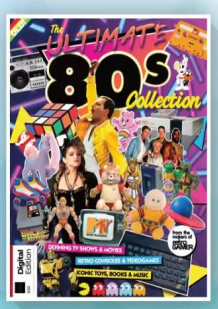

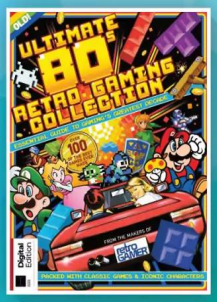

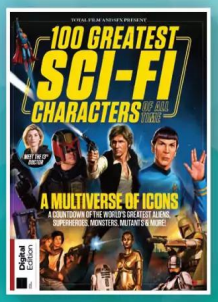

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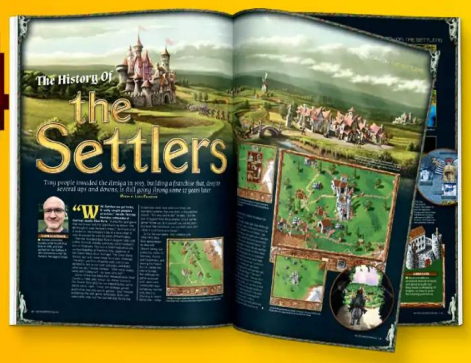

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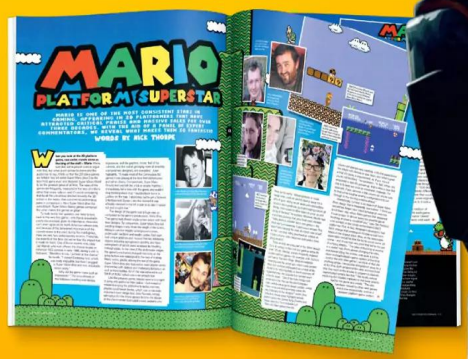

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